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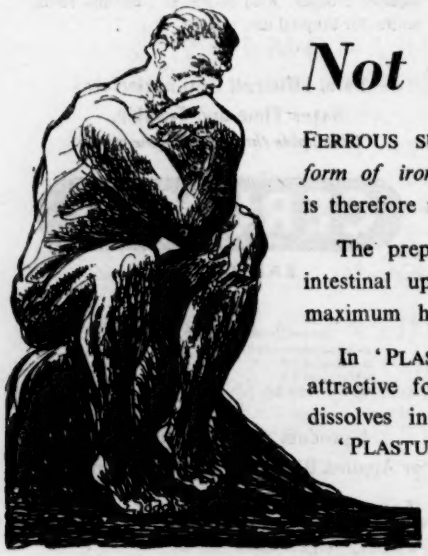

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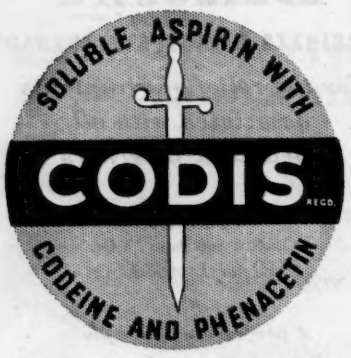

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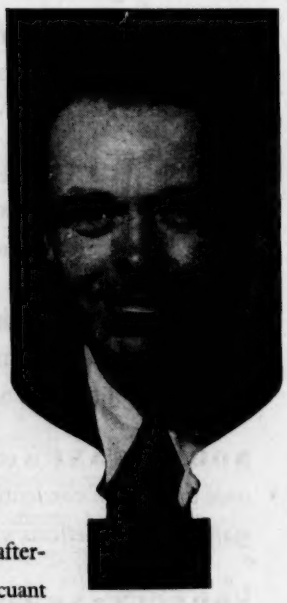

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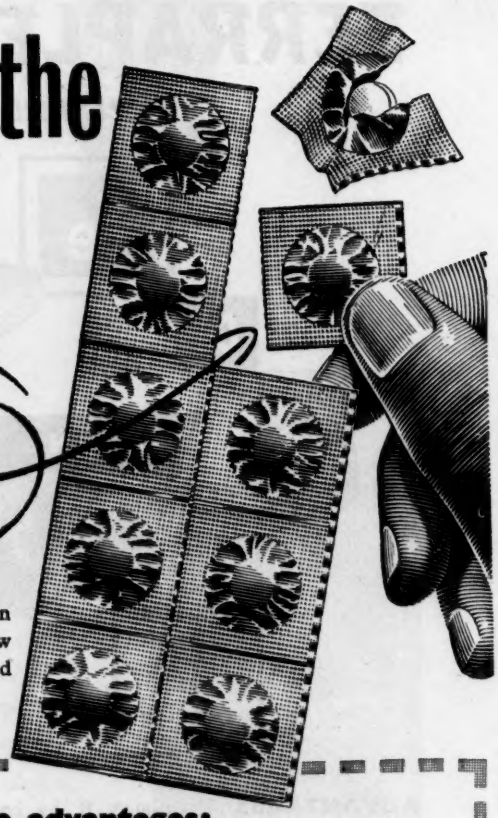

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Practitioner (1954) *172*, 643-4.

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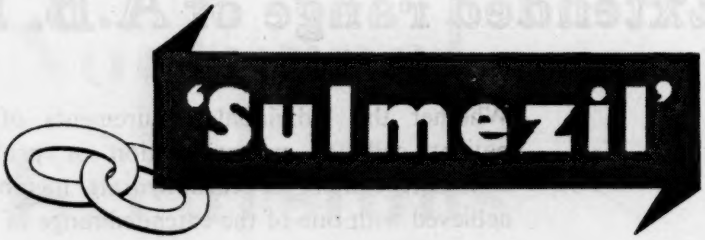

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THE IDIOPATHIC HYPERCALCÆMIC SYNDROMES OF INFANCY

K. G. LOWE
M.D. St. And., M.R.C.P., M.R.C.P.E.
SENIOR LECTURER IN MEDICINE

J. L. HENDERSON
M.D. Edin., F.R.C.P.E.
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SENIOR PÆDIATRIC REGISTRAR

UNIVERSITY OF ST. ANDREWS

With illustrations on plate

IN 1952 Fanconi and Girardet of Zürich, with Schlesinger, Butler, and Black of London, described two young children who exhibited a hitherto unrecognised syndrome of physical and mental retardation, chronic renal disease, osteosclerosis, and persistent hypercalcæmia. Both children also had harsh systolic murmurs, suggesting asymptomatic congenital heart-disease, and convergent strabismus. The signs of renal disease were albuminuria, retention of nitrogen, reduced urea-clearance, and (in one child) hypertension. Clinical and pathological evidence excluded primary disease of parathyroid glands, kidneys, or skeleton, and hypervitaminosis D. Schlesinger, Butler, and Black concluded that "the disorder is due to a collection of separate defects, probably genetically determined, resulting in congenital abnormalities affecting heart, kidneys, skeleton and metabolism."

Creery (1953) described a possible third case of this syndrome in an infant who developed anorexia, vomiting, and constipation at the age of 3 months, followed by listlessness and failure to gain weight.

From the age of 3 weeks she had been given large amounts of alkali. At 7 months she showed physical and mental retardation and severe wasting, weighing only 11½ lb. A loud cardiac systolic murmur and high blood-pressure were found. In the following 2 months the urine was usually acid and always contained a trace of albumin and some pus cells, and the blood-urea level remained high. There was persistent hypercalcæmia, and the urinary excretion of calcium was low. Radiography showed generally increased density of the skull and long bones.

Creery believes that this case and the two similar cases described by Fanconi et al. (1952) were severe examples of the syndrome described by Lightwood (1952a and b) and Payne (1952) under the title of "idiopathic hypercalcæmia of infants with failure to thrive." This illness usually develops at the age of a few months and is manifested clinically by anorexia, vomiting, constipation, and loss of weight. The important biochemical features are hypercalcæmia and a raised blood-urea level, but these changes are reversible.

Dawson and Craig (1954) have reported the findings in an infant who developed anorexia, vomiting, constipation, and hypotonia at the age of 5 months and died at the age of 11 months.

The serum-calcium, blood-cholesterol, and urea-nitrogen levels were raised. The urine was acid and contained pus cells. Radiography of the bones showed increased density in the skull and long bones. Necropsy showed patchy hyaline change in some glomeruli, with calcium-containing and eosinophilic casts in the distal and collecting tubules. The proximal tubules also showed degeneration and deposition of calcium.

They thought that there was a primary renal lesion—"nephron nephrosis of unknown ætiology"—with secondary biochemical disturbances.

Lightwood and Stapleton (1953) believed that Creery's patient and the two described by Fanconi et al. (1952) probably did not have the same disease as those described by Lightwood (1952a and b) and Payne (1952), and they differentiated the two syndromes as shown in table I.

We became interested in idiopathic hypercalcæmia when we saw a severe case similar in many respects to the two described by Fanconi et al. (1952). We report it in detail here together with six cases of the milder type of idiopathic hypercalcæmia (Lightwood 1952a, Payne 1952).

The Severe Case

Case 1.—A boy born on June 9, 1951, weighing 5 lb. 15 oz.

HISTORY

He was the first child of healthy parents, with no family history of consanguinity or noteworthy disease. The pregnancy was uncomplicated, and delivery was normal and spontaneous in the Simpson Maternity Hospital, Edinburgh. As the mother's milk was inadequate, the feeds were complemented with fresh diluted cow's milk. The baby's progress was satisfactory, though gain in weight was slow; he weighed 5 lb. 7½ oz. on discharge on the 10th day. At home he progressed well on feeds of National dried milk and supplements of orange-juice and cod-liver oil (Ministry of Food) in the amounts usually prescribed. He gained at the rate of 8 oz. a week. He was "rather windy" and was therefore given 'Dinneford's Magnesia' 1 teaspoonful not oftener than about twice a week. No other medicines were given.

At the age of 4 months he began to vomit his feeds and ceased to put on weight. No cause was found for the vomiting despite repeated visits to the doctor and several adjustments of diet. After the onset of vomiting 'Radiostoleum' min. 3 t.d.s. (=1800 I.U. of vitamin D daily) was substituted for the cod-liver oil. Constipation soon became troublesome, and he was given 'Milk of Magnesia' (Phillips) 1 teaspoonful several times a week.

When 10 months old he was admitted to the Royal Northern Infirmary, Inverness, under the care of Dr. James Ronald. He was wasted and weighed only 11⅓ lb. (expected weight about 18 lb.). His urine contained a little albumin and a few pus cells, and his hæmoglobin was 62%. No other abnormalities were recorded. Kahn and tuberculin tests were negative. At 11½ months radiography showed relatively normal wrists; at 13 months the lung fields and mediastinal shadow were

TABLE I—PRINCIPAL FEATURES OF TWO SYNDROMES OF IDIOPATHIC HYPERCALCÆMIA DEFINED BY LIGHTWOOD AND STAPLETON (1953)

Syndrome I	Syndrome II
"Idiopathic hypercalcæmia of infants with failure to thrive" (Lightwood 1952a)	"Chronic hypercalcæmia, with osteosclerosis, raised blood-urea, general retardation, and congenital malformations" (Fanconi et al. 1952)
Transient and benign. Recovery begins after a few weeks and with general improvement the blood chemistry returns to normal. There is no permanent physical or mental impairment	Prolonged and severe. There is much retardation of physical and mental growth. Although some general improvement takes place, the mental state usually remains poor
Facies normal	The facies may be characteristic: wide mouth; thick upper lip; receding mandible; low-set ears; ill-tempered and unhappy appearance
No hypertension No cardiac bruit	Hypertension Loud systolic bruit "Bruit probably due to hypertension." "No evidence that it is due to congenital heart-disease"
Radiography of bones normal	Radiography of bones shows osteosclerosis
Renal acidosis present in about 20% of cases	Renal acidosis not yet reported
Serum-calcium level 12–18 mg. per 100 ml. and blood-urea level about 70 mg. per 100 ml.	Similar rise of serum-calcium and blood-urea levels. There may also be hypercholesterolæmia

TABLE II—BLOOD FINDINGS IN CASE 1

Date	Hb (g. %)	Red cells per c.mm.	White cells per c.mm.	Differential white-cell count (%)	E.S.R. (mm. in 1 hr.)	Reticulocytes (%)	Blood film	Marrow	Absolute values
Apr. 24, 1952	8·7	..	6900	" Normal "	..	..	..	..	..
Sept. 12, 1952	12·6	..	13,000	..	28	..	..	..	..
Oct. 24, 1952	..	..	9000	..	..	..	..	..	..
Nov. 19, 1952	9·8	..	..	..	..	..	..	..	..
Dec. 24, 1952	10·4	3,020,000	13,000	Neutrophils 34 Eosinophils 0 Basophils 1 Lymphocytes 56 Monocytes 7·5 Smears 1·5	..	0·75	" No abnormality "	..	Packed corpuscular volume .. .. .. 25 % Colour-index .. .. 1·07 Mean corpuscular volume .. .. .. 83 c.μ Mean corpuscular Hb concentration .. 40 %
Jan. 16, 1953	9·6	3,290,000	10,200	Neutrophils 41 Eosinophils 1·5 Basophils 0 Lymphocytes 46 Monocytes 5·5 Smears 6	..	<1	" Normal "	" Normal "	Packed corpuscular volume .. .. .. 27 % Colour-index .. .. 0·9 Mean corpuscular volume .. .. .. 82 c.μ Mean corpuscular Hb concentration .. 35 %
Mar. 25, 1953	10·5	..	4300	..	40	..	..	..	..
June 17, 1953	9·1	..	..	..	..	..	..	..	..

normal, but subsequent review of the radiographs showed that the vertebræ and ribs were osteosclerotic at that time. A blood-transfusion (100 ml.) was given empirically, but there was no general improvement. After 5 months in hospital without improving, he was transferred to a pædiatric ward in Dundee Royal Infirmary on Sept. 12, 1952. He was then aged 15 months and had been ill for 11 months.

EXAMINATION

A small, wasted, pale child with an elfin appearance (fig. 1). Length 25 in. (expected 29 in.) and weight 12 lb. 6 oz. (expected 22 lb.). No notable structural abnormalities. Head circumference 42 cm. Only three teeth—central incisors. Anterior fontanelle of normal size and admitted one finger. No strabismus. The tone of his skin and muscles was poor.

He showed an interest in his surroundings and responded to people with smiles occasionally, but he seldom grasped objects, could not sit without support, and never spoke any baby words. He gave the impression of an apathetic baby aged about 6 months and thus of gross mental retardation, contributed to by physical weakness, rather than of primary mental defect. He vomited once or twice a day, and his stools were constipated. A variable soft systolic murmur was heard over the præcordium, and his blood-pressure was 110/70 mm. Hg. There was no sign of conjunctival deposits of calcium or band keratitis. A Mantoux tuberculin test (1 : 1000 O.T.) was negative. No pathogens were found on culture of the stools.

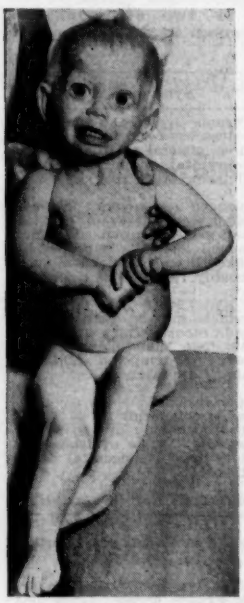


Fig. 1 (case 1)—Patient aged 15 months.

INVESTIGATIONS

Electrocardiography showed merely a low marginal QTc consistent with hypercalcæmia.

Lumbar puncture produced normal cerebrospinal fluid (C.S.F.) which contained calcium 7·2 mg. per 100 ml.

Blood findings are summarised in table II: a normochromic normocytic anæmia with leucocytosis was found on several occasions.

Urinary findings are shown in table III: proteinuria, low urea-clearance, and evidence of urinary infection were found on several occasions. The urine was acid when the pH was estimated, there was no glycosuria or amino-aciduria, and the excretion of calcium was within normal limits.

Radiography of the skeleton (figs. 2–11) showed a general increase in bone density with absence of trabecular pattern. There were transverse band-like stratifications near the ends of long bones (figs. 5–7 and 10) somewhat resembling osteopetrosis (Albers-Schönberg disease), and a peculiar zonular effect in the tarsal centres with an outer collar of increased density (fig. 4): the base of the skull showed the same dense amorphous texture as the rest of the skeleton. Plain films of the abdomen showed no evidence of nephrocalcinosis, and intramuscular pyelography failed on two occasions to demonstrate the renal pelves. A barium meal showed a normal œsophagus and normal gastro-intestinal tract. The lung fields, heart, and mediastinum were normal.

Blood-chemistry findings are given in table IV. There was a persistent hypercalcæmia and a high blood-urea level that fluctuated, probably in relation to the state of hydration. Dietary changes induced either mild acidosis or mild alkalosis because of the renal impairment. The plasma-phosphate level fluctuated from one very low value to values at or just above the upper limit of normal. The alkaline-phosphatase level was low on six occasions and at the upper limit of normal on two occasions. Several high values were reported for the plasma-proteins, and there was hypercholesterolæmia. The report on plasma electrophoresis read: " Plasma-protein pattern is normal. The lipoprotein pattern may be abnormal. The β-lipoprotein seems to be of greater mobility than in most sera, and the α-lipoprotein is absent." Plasma-magnesium levels were within normal limits except for one high reading.

This biochemical pattern resembled that seen in the cases reported by Fanconi et al. (1952).

THE KIDNEY

Renal biopsy was carried out on Feb. 26, 1953, under general anæsthesia. The right kidney was explored and appeared relatively normal to the naked eye. There were fœtal lobulations but no obvious pyelonephritic scars. A wedge of tissue was taken from the middle of the kidney.

The biopsy specimen was a narrow wedge of tissue, semicircular in outline, with a radius of 5 mm. It was received in routine formal-sublimate fixative. Sections were stained with hæmatoxylin and eosin, the per-iodic acid Schiff sequence, Giemsa's stain, alizarin red, von Kossa's reagent (for calcium), and Perls's reagent (for iron).

Microscopy shows a normal capsule but severe damage to the cortex and medulla.

Cortex

This is greatly narrowed, owing to disappearance of proximal and distal convoluted segments in the outer half, and replacement by abundant chronic inflammatory cells and young fibrous tissue (fig. 12). A count of *glomeruli* in one of the sections shows a total of 222 (80 normal, 142 abnormal). Of the 80 normal 69 lie in the juxtamedullary zone, 11 elsewhere in the cortex. The abnormal glomeruli show, in varying degree, proliferation of capsular epithelium, fusion of this epithelium with the glomerular tuft, and obliterative fibrosis (figs. 13 and 14). Sections stained with per-iodic acid and Schiff's reagent show clearly that the cellular proliferation and fibrosis are taking place on the inner side of the basement membrane of Bowman's capsule: it is not pericapsular.

Deposits of abnormal material, sometimes resembling calcified concretions, sometimes merely finely granular, lie indiscriminately throughout the cortex, not related to any

particular segment or segments of the nephron, and, unlike the lesions in the medulla yet to be described, unaccompanied by any granulomatous reaction (fig. 15). In many places where actual concretions have not yet formed, the mineral material takes the form of fine granules: their spherical contour, apparent encapsulation, and affinity for Giemsa's stain raised at one time the question of a possible fungal infection such as blastomycosis (fig. 16).

A few of these deposits give a positive reaction with von Kossa's reagent, but none reacts positively with alizarin red. On the other hand, almost all give a strong positive reaction for iron. That calcium-containing tissue may sometimes give a positive reaction for iron has long been recognised (Cameron 1930), but even so the findings here were rather unexpected.

Preliminary investigation has shown that the unusual response to these methods of staining is partly due to the fixative used. Through the kindness of colleagues, material has been examined from two other examples of calcinotic change in the kidney. In each of these cases both alcohol-fixed tissue and sublimate-fixed tissue were available. Sections of alcohol-fixed tissue were stained for iron and for calcium, and compared with sections of sublimate-fixed tissue from the same kidney. The sublimate-fixed tissue showed a more intense iron reaction (Perls) and a less intense calcium reaction (von Kossa) than the alcohol-fixed tissue. It would seem that formal-sublimate has a slight lytic action on calcium. The intensified reaction for iron may be due either to an unmasking effect of this fixative or to deposition, in calcified or calcifying areas, of iron present as an impurity in the fixative, a view which has received some confirmation from experiments not as yet completed. Despite these artificial alterations the general intensity of the iron reaction suggests that the deposition of iron had preceded the deposition of calcium in areas which ultimately became wholly calcified. This agrees with the views of Schmorl (1904) and Ehrlich (1906) that iron is deposited before calcium. It therefore seems justifiable to accept the appearances as those of nephrocalcinosis at a very early stage.

Such few *tubules* as remain in the outer cortex are normal, though many contain eosinophilic casts, mostly homogeneous and hyaline but sometimes granular. Inflammatory cells reach from the cortex to the outer medulla in narrow streaks. The juxtamedullary zone shows no inflammatory changes other than these traversing streaks, and, apart from occasional slight dilatation, its proximal and distal convoluted segments appear entirely healthy.

The *blood-vessels*, apart from the glomerular capillaries, show no significant abnormality.

TABLE III—URINE IN CASE 1

Date	Daily volume (ml.)	Sp. gr.	Proteinuria	Deposit	Culture	pH	Urea (g. per 100 ml.)	Calcium	Magnesium	Phosphate	Other investigations
Sept. 12, 1952	..	..	Nil	1–2 white cells per high-power field	..	6	..	Sulkowitch: normal turbidity	..	..	..
Oct. 2, 1952	..	..	..	2 or 3 white cells per high-power field	..	..	..	10·3 mg. per 100 ml.	..	60 mg. per 100 ml.	..
Oct. 7, 1952	..	..	+	Moderate number of pus cells	Sterile	..	..	..	..	..	..
Oct. 22, 1952	..	..	..	..	..	..	..	7·2 mg. per 100 ml.	..	..	..
Nov. 1, 1952	300	1·016	..	..	..	..	1·02	Total = 35·1 mg. (11·7 mg. per 100 ml.)—i.e., 6·4 mg. per kg. of body-weight	..	..	Urea clearance = 25% of average normal
Jan. 31, 1953	..	..	..	1 white cell per high-power field	..	..	..	..	..	..	..
Feb. 10, 1953	..	..	..	..	..	..	1·2	..	..	..	No glycosuria or amino-aciduria by chromatography
Feb. 11, 1953	..	..	..	Occasional pus cell	..	..	..	..	..	..	..
Mar. 25, 1953	..	..	..	..	..	..	..	Sulkowitch: normal turbidity	..	..	..
Mar. 27, 1953	..	..	+	A few pus cells	*Staph. albus* and *B. proteus*	..	..	..	..	..	..
Apr. 20, 1953	460	1·016	..	..	..	..	0·9	Total = 68·2 mg.—i.e., 11·4 mg. per kg. of body-weight (14·8 mg. per 100 ml.)	Total = 32·9 mg.—i.e., 5·5 mg. per kg. of body-weight (7·1 mg. per 100 ml.)	..	..
Apr. 27, 1953	380	1·013	..	..	..	5	1·1	Total = 23·9 mg.—i.e., 4 mg. per kg. of body-weight (6·3 mg. per 100 ml.)	Total = 31·2 mg.—i.e., 5·2 mg. per kg. of body-weight (8·2 mg. per 100 ml.)	..	..
May 25, 1953	..	..	..	..	..	..	..	18·8 mg. per 100 ml.	..	..	..
June 15, 1953	720	..	..	..	..	..	..	Total = 83 mg. (11·6 mg. per 100 ml.)	..	..	..
June 17, 1953	670	..	..	..	..	..	..	Total = 80·4 mg. (12 mg. per 100 ml.)	..	..	..
June 19, 1953	850	..	..	..	..	..	..	Total = 121·6 mg. (14·3 mg. per 100 ml.)	..	..	..
July 23, 1953	..	..	Trace	A few white cells and red cells	*Esch. coli*	..	..	..	..	..	..
Oct. 24, 1953	..	..	Nil	A few pus cells per high-power field	..	..	..	..	..	..	..
Nov. 12, 1953	..	..	Nil	No pus	..	5	..	..	..	..	..
Dec. 26, 1953	..	..	..	No pus	..	..	..	..	..	..	..
Feb. 10, 1954	..	..	..	No pus	..	5	..	Sulkowitch: low normal	..	..	Urea clearance about 10% of average normal

TABLE IV—BLOOD CHEMISTRY IN CASE 1

Date	Urea (mg. per 100 ml.)	Calcium (m.eq. per litre)	Calcium (mg. per 100 ml.)	Phosphorus (m.eq. per litre)	Phosphorus (mg. per 100 ml.)	Proteins (g. per 100 ml.)	Bicarbonate (m.eq. per litre)	Bicarbonate Vols. %	Chloride (m.eq. per litre)	Chloride (mg. per 100 ml.)	Sodium (m.eq. per litre)	Sodium (mg. per 100 ml.)	Potassium (m.eq. per litre)	Potassium (mg. per 100 ml.)	Magnesium (m.eq. per litre)	Magnesium (mg. per 100 ml.)	Cholesterol (mg. per 100 ml.)	Alkaline phosphatase (K.-A. units)	Sugar (mg. per 100 ml.)
Sept. 19, 1952	..	6·0	12·0	2·9	5·2	..	..	..	108	632	..	..	..	..	..	..	..	6	..
,, 28, ,,	65	6·1	12·2	..	..	8·0 (alb. 5·0, glob. 3·0)	23·2	52	107	626	..	..	..	..	..	..	..	6	..
,, 29, ,,	..	6·6	13·2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 30, ,,	..	6·2	12·4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oct. 2, ,,	..	..	..	2·9	5·2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 22, ,,	72	6·3	12·6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 24, ,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	250	..	..
Nov. 19, ,,	45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 24, ,,	..	..	..	..	..	9·0 (alb. 4·8, glob. 4·2)	..	..	105	617	..	..	..	..	..	..	325	8	..
,, 26, ,,	6·2	12·4	..	..	8·0 (alb. 5·0, glob. 3·0)	..	..	..	..	133	308	..	..	..	..	..	..	..	..
Dec. 22, ,,	100	5·2	10·4	..	..	9·0 (alb. 6·0, glob. 3·0)	..	..	..	..	..	..	..	..	..	..	160	..	..
,, 23, ,,	70	5·9	11·8	1·2	2·2	..	..	..	..	..	..	..	..	..	..	..	200	6	..
Jan. 14, 1953	65	6·7	13·4	..	..	7·0 (alb. 4·8, glob. 2·2)	..	..	110	643	143	328	..	..	..	..	200	8	..
,, 27, ,,	35	6·5	13·0	..	..	6·5 (alb. 4·4, glob. 2·1)	..	..	..	..	139	320	..	..	..	..	200	23	..
Feb. 10, ,,	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
Mar. 17, ,,	..	6·6	13·2	2·4	4·3	7·8 (alb. 5·2, glob. 2·6)	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 25, ,,	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	..
Apr. 20, ,,	87	6·8	13·6	..	..	9·0 (alb. 5·2, glob. 3·8)	25	56	..	..	..	..	..	..	2·5	3·0	..	..	..
,, 27, ,,	124	6·0	12	..	..	9·0 (alb. 5·4, glob. 3·6)	33·3	74·6	..	..	..	..	..	..	3·0	3·6	..	..	..
May 18, ,,	..	6·0	12	..	..	..	17·5	39·7	..	..	..	..	..	..	..	..	..	..	..
,, 25, ,,	..	6·0	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
June 17, ,,	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
July 31, ,,	120	7·1	14·2	3·8	6·8	8·3 (alb. 5·0, glob. 3·3)	..	..	..	..	..	..	..	..	..	..	..	25	..
Aug. 23, ,,	270	6·4	12·8	3·5	6·3	7·6	..	..	..	..	146	334	..	..	2·0	2·4	250	..	..
Sept. 7, ,,	82	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, 28, ,,	..	6·8	13·6	..	..	..	30·3	67·9	..	..	..	..	..	..	2·8	3·3	..	..	..
Oct. 14, ,,	160	7·4	14·8	..	..	..	29	66	..	..	..	..	..	..	2·9	3·4	..	..	..
Nov. 3, ,,	165	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dec. 2, ,,	114	7·0	14	..	..	..	21	47	109	638	154	354	5·7	22·2	3·3	4·1	..	..	..
Feb. 9, 1954	160	7·5	15	..	..	..	..	..	..	..	..	..	..	..	..	..	250	..	..
,, 11, ,,	..	..	..	3·2	5·8	6·4 (alb. 3·1, glob. 3·3)	..	..	..	..	..	..	..	..	..	..	..	12	..

Medulla

This shows many degenerative granulomatous lesions in association with tubules which were usually recognisable as more or less distorted *collecting tubules* (figs. 17–19) but occasionally unidentifiable because of tissue breakdown (fig. 20). Their random distribution can be seen in fig. 12. The typical lesion is a zone of proliferated interstitial tissue of varying depth around the tubule, and infiltration of this area with coarsely or finely granular mineral material. This material lies outside the basement membrane of the usually intact, but sometimes disintegrating, tubular epithelium. Chronic inflammatory cells, including eosinophil granulocytes, are constantly present; occasional multinucleated foreign-body giant cells are seen (fig. 19). There is no constant relation between the depth of the infiltrated zone and the degree of epithelial damage.

Some of the damaged tubules contain many pus cells (fig. 18). Of the unaffected collecting tubules a few show dilatation, which may be considerable. The remainder of the collecting tubules and other medullary segments of the nephrons are normal. The interstitial tissue in areas apart from the zones of infiltration is also normal, as are the blood-vessels.

Interpretation

There are thus three main abnormalities: the granulomatous tubular lesions, the capsular proliferation and glomerular fibrosis, and the peripheral cortical destruction.

The tubular lesions may be reasonably explained as due to precipitation of calcium in some form in the surrounding tissue and a granulomatous response thereto. There is no evidence that calcium has been precipitated either within the epithelial cells or between the cells and their basement membrane, as described by Butler et al. (1936) in infantile renal acidosis.

The obliteration and disappearance of the glomeruli could be attributed to damage consequent on both impaired drainage through the abnormal collecting tubules and a low-grade chronic pyelonephritis, but capsular proliferation and crescent formation of the degree seen here is unusual in chronic pyelonephritis. Further, the apparent normality of the glomeruli throughout the juxtamedullary zone makes tubular obstruction as unlikely a single cause as either pyelonephritis or glomerulonephritis.

The possibility that the glomerular changes could be due to some extent to intermittent or low-grade cortical ischæmia is not excluded by the active proliferative changes in the subcapsular tissues, for crescent formation may follow severe glomerular capillary stagnation as in cortical necrosis (Sheehan and Moore 1952) or malignant hypertension; but the amount of tissue is really too small to justify speculation on this point.

PROGRESS

The severity of kidney damage is such that no special treatment seems to be indicated, and the parents have been warned of the grave prognosis.

As the child comes from a divided home he is still being nursed in hospital. During the 18 months since admission to our unit there has been little change in his general condition. His diet has consisted chiefly of cow's milk with no added vitamin D. Alkaline medicines, such as magnesia, have been avoided. He has gained only $2^1/_2$ lb. in weight, and there has been only slight evidence of mental development. His appearance at the age of 2 years 8 months is shown in fig. 21. The blood-urea level has shown an upward trend; this is the only notable change in his blood chemistry. A low calcium diet, consisting mainly of soya milk and containing about 100 mg. of calcium a day, given for $3^1/_2$ weeks did not reduce the hypercalcæmia; a longer trial could not be given, because the diet was badly tolerated and the child lost much weight.

Ethylenediamine tetra-acetic acid (E.D.T.A.A.) was also given a trial. This substance is a chelating agent which forms soluble complexes with multivalent metallic ions which are non-ionised and readily excreted intact (Spencer et al.

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. LOWE AND OTHERS

Fig. 2 (case 1)—Increased density of bony thorax at 16 months.

Fig. 3 (case 1)—Skull at 18 months.

Fig. 4 (case 1)—Outer zone of increased density in tarsal bones at 16 months.

Fig. 5 (case 1)—Knees at 16 months. Note transverse lines of increased density in metaphyses.

Fig. 6 (case 1)—Wrist and hand at 16 months. Note transverse lines of increased density at lower ends of radii and ulnæ.

Fig. 7 (case 1)—Wrist and hand at 2 years. Transverse lines of increased density in radius and ulna have travelled proximally.

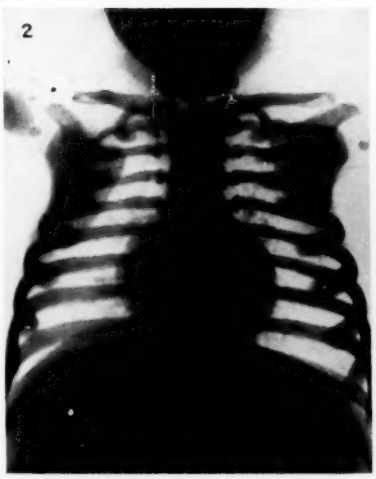
Fig. 8 (case 1)—Vertebral column at 16 months.

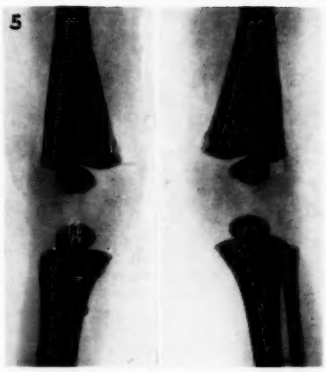
Fig. 9—Vertebral column of healthy child of same age and sex as patient 1 (fig. 8) taken with same X-ray factors.

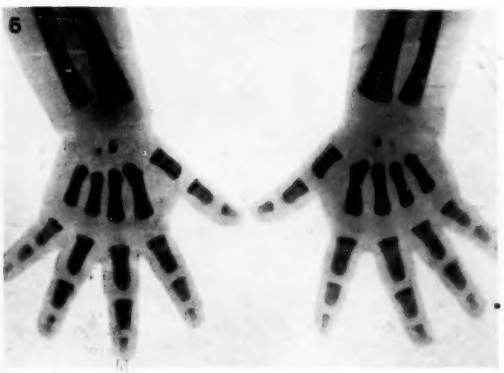
Fig. 10 (case 1)—Knee at 23 months.

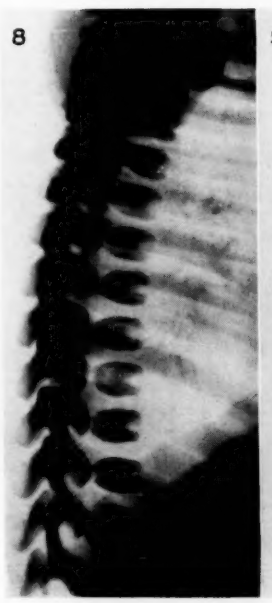
Fig. 11—Knee of healthy child of same age and sex as patient 1 (fig. 10) taken with same X-ray factors.

DR. LOWE AND OTHERS: HYPERCALCÆMIC SYNDROMES OF INFANCY

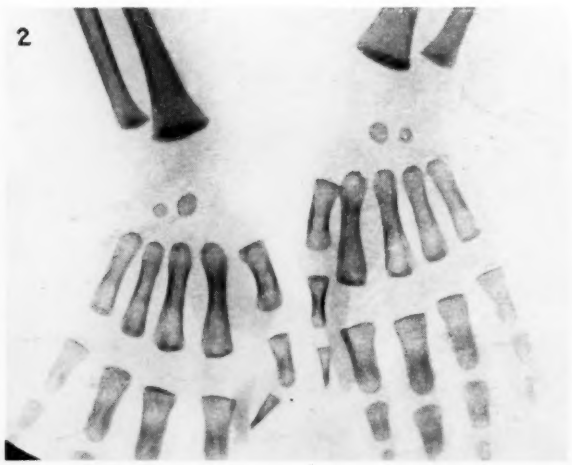




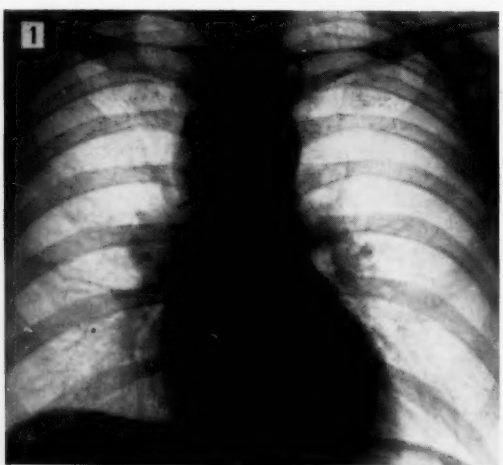


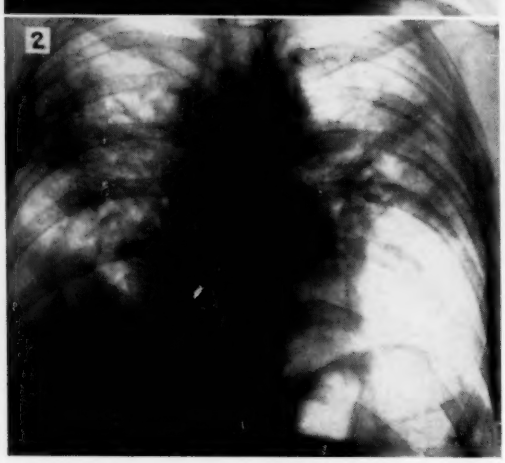


DR. CREERY AND MR. NEILL: IDIOPATHIC HYPERCALCÆMIA IN INFANTS WITH FAILURE TO THRIVE

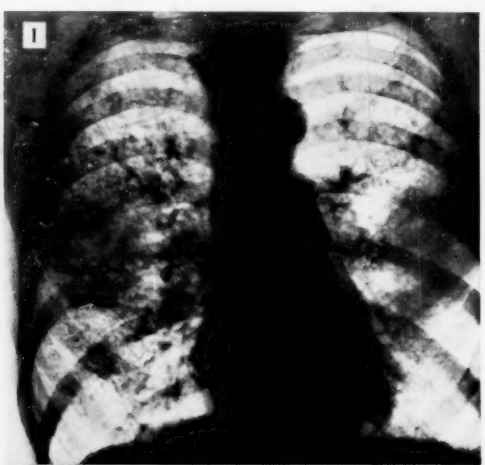


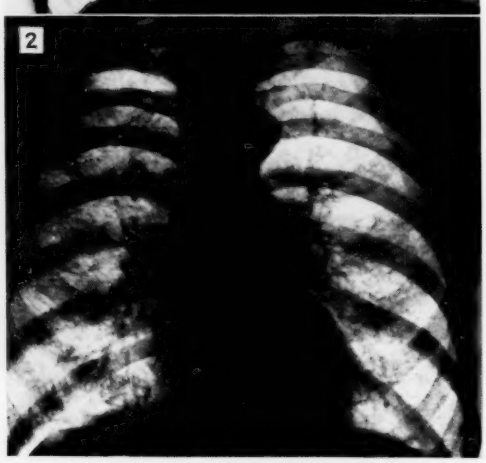
DR. WHITFIELD AND OTHERS: FATAL POST-RADIATION PNEUMONITIS





DR. HARRIS: PULMONARY MANIFESTATIONS OF "RHEUMATOID DISEASE"





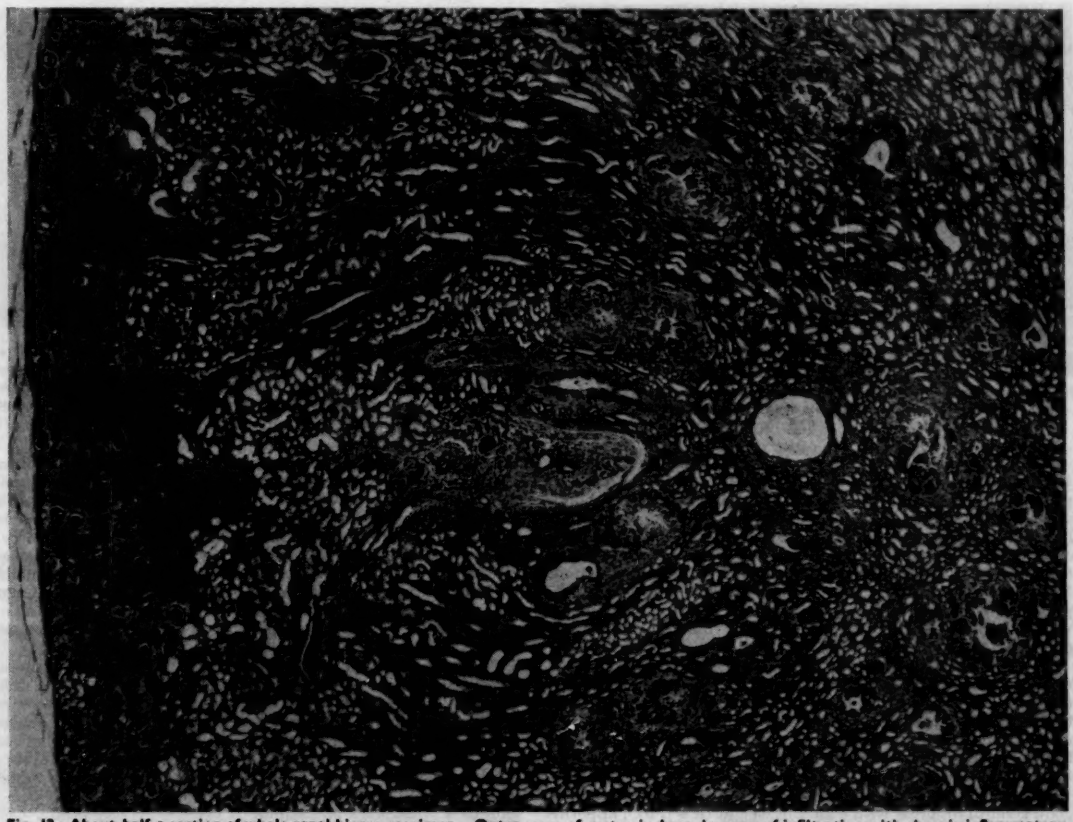


Fig. 12—About half a section of whole renal-biopsy specimen. Outer zone of cortex is dense because of infiltration with chronic inflammatory cells: in this zone glomeruli are scanty. Juxtamedullary zone is essentially normal. Medulla contains many granulomatous lesions around disintegrating or altered collecting tubules. (Per-iodic acid and Schiff. ×33.)

1952). It was hoped that orally administered E.D.T.A.A. would bind calcium in the bowel and reduce its absorption. The dosage was 50 mg. twice daily for 3 days, followed by 100 mg. thrice daily for 16 days. This régime had no effect on the serum-calcium level. It had been hoped to keep the patient on a safe dose of E.D.T.A.A. in combination with a low-calcium diet, but we could not do this. The patient could only tolerate a milk diet, and a dangerously high dosage of E.D.T.A.A. would have been required to chelate with the high total daily calcium intake.

A further possible method of treatment of hypercalcæmia in infancy is the use of calcium-free milk prepared by suitable ion-exchange resins (Dent 1953, Ferguson and McGowan 1954). The preparation of calcium-free milk takes much time, and in view of the advanced renal damage it was not used in this case.

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. CREERY AND MR. NEILL

Figs. 1 and 2—Transverse bands of increased density at metaphyseal margins of lower ends of radius and ulna and at the ends of the metacarpals. Metaphyseal rarefaction is seen.

Fig. 3—Similar changes in femur and tibia.

DR. WHITFIELD AND OTHERS

Fig. 1—Chest radiograph before radiotherapy, showing enlarged hilar and paratracheal glands on the right side.

Fig. 2—Nine weeks after conclusion of radiotherapy, showing fan-shaped shadows spreading out from both hila.

DR. HARRIS

Fig. 1—Radiograph of chest on Aug. 12, 1953, showing diffuse non-homogeneous opacities in the midzones of both lungs.

Fig. 2—Radiograph of chest on Oct. 28, 1953, showing that considerable resolution has occurred, leaving only faint reticular shadows.

The Six Milder Cases

The following are examples of the milder type of idiopathic hypercalcæmia.

Case 2.—A girl born on Dec. 12, 1952, weighing 5 lb. 7 oz., was artificially fed on National dried milk and progressed well for 5 months. Vomiting then began, persisted, and became more frequent—almost after every meal. During the same period her appetite became poor and constipation troublesome; the weight gain was checked and she became thin, but she remained happy.

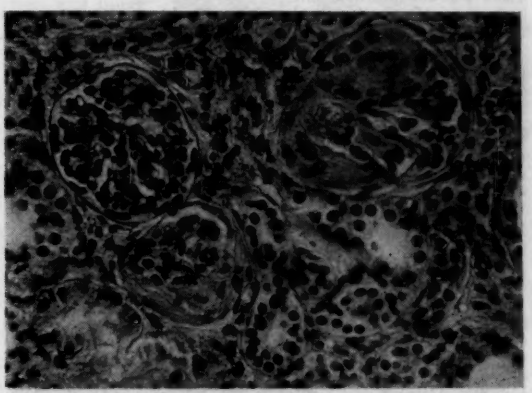


Fig. 13—One of the few normal glomeruli in outer cortex, with two others largely obliterated and replaced by proliferating capsular epithelium. (Hæmatoxylin and eosin. ×320.)

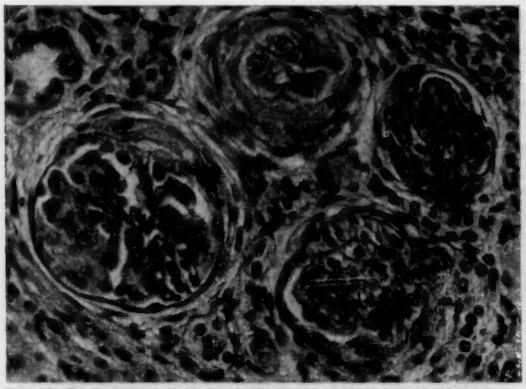


Fig. 14—Four glomeruli of which three are almost completely obliterated: fourth shows partial fibrosis of vascular tuft. (Per-iodic acid and Schiff. ×320.)

Fig. 16—Calcified spherical granules with outer "capsule" in wall of collecting tubule outside basement membrane (seen as faint line curving inwards and upwards from lower right corner). Large cell at upper right corner is part of tubular epithelium. (Hæmatoxylin and eosin. ×970.)

Investigation.—When admitted to hospital on July 29, 1953, aged 7½ months, she was a small, contented, infant of poor nutrition, weighing 10 lb. 13 oz., and her mental development was advanced for her age. A soft systolic murmur was heard at the apex of the heart. Hæmoglobin 100% (Sahli), erythrocyte-sedimentation rate (E.S.R.) 22 mm. in 1 hour (micro-Westergren). White blood cells 13,000 per c.mm. Mantoux test negative. The urine contained a few pus cells per high-power field. Radiographs of skeleton, and intravenous pyelograms were normal. The blood chemistry is given in table v.

Progress.—During her stay in hospital she fed well on cow's milk without added vitamin D. She vomited occasionally in the first few weeks but not afterwards. Constipation was troublesome and was treated with liquid paraffin. No alkaline medication was given. The weight fluctuated considerably but on discharge had risen to 13 lb. 14 oz., a gain of 3 lb. 1 oz. since admission.

Follow-up.—During the 4 months after discharge there was good general progress with a gain in weight of 4½ lb.; appetite was good, vomiting absent, and stools normal. Further examination of the blood at the end of this time showed a persistent though considerably diminished hypercalcæmia, a normal blood-urea level, and a slightly raised blood-cholesterol (table v).

Case 3.—A boy born on Aug. 30, 1952, at full time, was artificially fed on National dried milk and progressed well in the first few months. At 5 months he had an upper respiratory infection, which was followed by anorexia, vomiting, constipation, and failure to gain weight. He was seen as an outpatient at 8½ months, when a congenital malformation of the heart was diagnosed on the evidence of a harsh systolic murmur, and this was thought to be the reason for his failure to thrive; he weighed 14 lb. 8 oz. During the following months there was no improvement.

Investigation.—On admission, aged 13 months, he was apathetic, pale, and thin, and weighed only 13 lb. 8 oz., 1 lb. less than 4 months earlier. It was difficult to assess his mental development because of his poor general condition. Hæmoglobin 105%, E.S.R. 10 mm. in 1 hour. White blood cells 11,600 per c.mm. Mantoux test negative. The urine was acid and contained albumin, abundant pus cells, and *Staphylococcus aureus* (phosphatase-positive). The organisms and almost all the pus cells were cleared from the urine within a fortnight with oxytetracycline therapy. Radiographs of the lungs and heart and an electrocardiogram were normal. Radiographs of the skeleton were normal. For blood chemistry see table v.

Progress.—During his 4 months in hospital his general condition fluctuated considerably. He was fed on cow's milk with no added vitamin D. He slowly gained weight, but for the first 2½ months he had recurrent phases of more severe vomiting with an attendant fall in weight. During the last month he had no vomiting, a good appetite, an appearance of well-being, and a rapid gain of weight. His mental development was normal. On discharge he weighed 16 lb. 13 oz., a gain of 3¼ lb. since admission.

Follow-up.—When seen a month after discharge he was continuing to progress well and had gained a further 10 oz. in weight. There was, however, no corresponding improvement in his blood chemistry (table v); the serum-calcium level was still raised at 12·16 mg. per 100 ml. and the blood-urea was 60 mg.

Case 4.—A boy born on Jan. 13, 1953, weighing 6 lb. 2 oz., was artificially fed on National dried milk from the age of 2 weeks. At 3 months he began to have vomiting, which became worse as the months passed. Constipation became very troublesome in spite of milk of magnesia. His appetite was at first good but later became poor. He had weighed 20¼ lb. but had lost 3 lb. of this before he was first seen at the age of 10 months. He had not been so happy in recent weeks.

Investigation.—On admission on Nov. 25 aged 10 months, he was fairly well nourished but appeared to have lost weight; he weighed 17 lb. 9 oz. His mental development was normal.

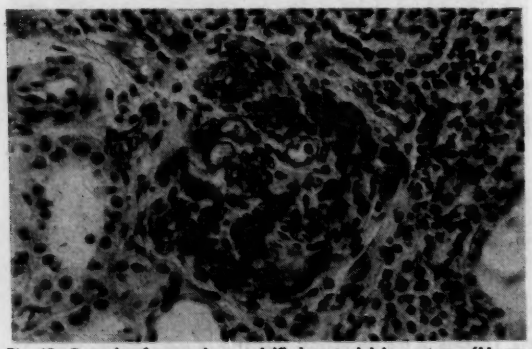


Fig. 15—Deposit of amorphous calcified material in cortex. (Hæmatoxylin and eosin. ×320.)

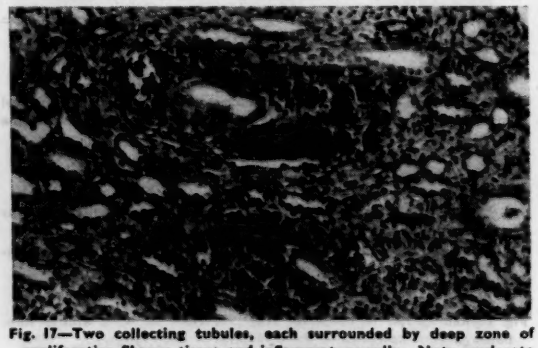


Fig. 17—Two collecting tubules, each surrounded by deep zone of proliferative fibrous tissue and inflammatory cells. Note moderate amount of calcified deposit in these zones. (Perls. ×145.)

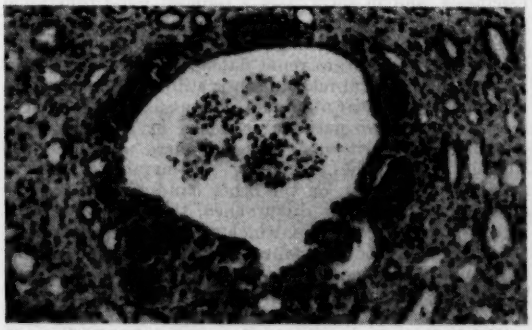


Fig. 18—Dilated collecting tubule, containing pus cells and still with intact epithelium, surrounded by relatively narrow inflammatory zone containing much amorphous deposit. (Peris. ×145.)

Scybalous masses were palpated in his descending colon. Hæmoglobin 83%. E.S.R. 25 mm. in 1 hour and white cells 13,400 per c.mm. Mantoux test negative. The urine was neutral, and an occasional pus cell was seen in a high-power field; there was no albumin. Barium screening of the œsophagus and stomach were normal. Radiographs of the skeleton were normal. For blood chemistry see table v.

Progress.—He remained in hospital for 8 weeks, during which time he was fed on cow's milk with no added vitamin D. Mixed feeding was begun before he was discharged home. His weight fluctuated considerably; after a few weeks his appetite

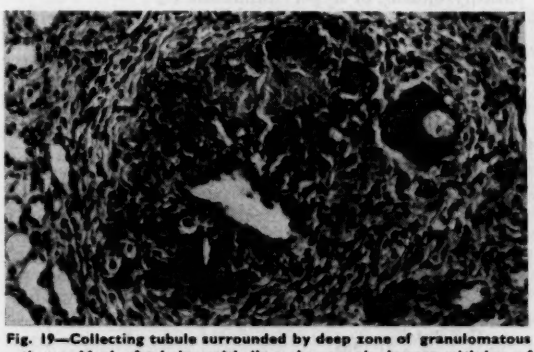


Fig. 19—Collecting tubule surrounded by deep zone of granulomatous tissue. Much of tubular epithelium shows early damage with loss of normal architecture due to irruption of underlying inflammatory tissue. At one side lies a large multinucleated giant-cell enclosing a deposit of calcium. (Peris. ×145.)

improved and he became happy. He continued to have some vomiting, but less than formerly. His progress was checked by an attack of purulent conjunctivitis and by an upper respiratory infection. On discharge he weighed 18 lb. 8 oz., a gain of 15 oz.

Follow-up.—When seen again 2 months after discharge he was continuing to do well and had gained a further 4 lb. in weight. Nevertheless there had been no further reduction of the serum-calcium level which was 12·1 mg. per 100 ml. (table v).

Case 5.—A girl born on May 22, 1953, weighing 7 lb. 9 oz., was breast-fed for 11 weeks and then given National dried milk. She made good progress until the age of 4½ months, when she began to have occasional vomiting. This became persistent and was accompanied by severe constipation and loss of weight, but she remained lively.

Investigation.—On admission on Dec. 16, aged 7 months, she appeared to have lost weight but was bright and happy. Her mental development was normal. She weighed only 12 lb. 10 oz., having at one time attained 15 lb. 4 oz. Hæmoglobin 86%. E.S.R. 12 mm. in 1 hour. White blood cells 10,800 per c.mm. Mantoux test negative. Urine neutral; no pus cells. For blood chemistry see table v.

Progress.—She remained in hospital for 5 weeks and progressed well, apart from an upper respiratory infection contracted in the ward. Her diet consisted of cow's milk with no added vitamin D, and no alkaline medicines were given.

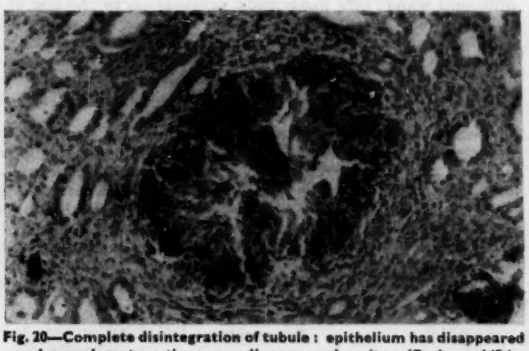


Fig. 20—Complete disintegration of tubule: epithelium has disappeared and granulomatous tissue now lines ragged cavity. (Peris. ×145.)

She vomited on only three occasions, but a tendency to constipation persisted. She fed well and was happy. On discharge she had gained 1 lb. 3 oz.

Follow-up.—When seen on Feb 17., 1954, her good progress was found to be continuing, with no return of vomiting, and her mother said: "She is now back to normal." She had gained a further 3 lb. 3 oz. in weight. There was, however, no improvement in the serum-calcium level, which remained at 11·9 mg. per 100 ml., the same as on admission 2 months earlier.

Case 6.—A boy born on May 19, 1953, weighing 7 lb. 12 oz., was breast-fed for 4 months and gained weight well. When the mother developed breast abscesses he was fed on National dried milk. He continued to progress until the age of 7 months, when vomiting started. At first it occurred with milk feeds, and semi-solids were fairly well tolerated, but later he vomited persistently after all types of feed. He became anorexic, listless, and did not gain weight. Constipation was intermittent and not troublesome.

Investigation.—When admitted on March 7, at the age of 10 months, he was pale, restless, fretful, and poorly nourished, with evident dehydration and muscular hypotonia. Bilateral otitis media was present. Hæmoglobin 90%. White blood cells 15,400 per c.mm. E.S.R. 20 mm. in 1 hour. Mantoux test negative. Urine normal. Radiographs of chest and upper alimentary tract were normal. For blood chemistry see table v.

Fig. 21 (case 1)—Patient, aged 2 years 8 months, with healthy child of same age.

Progress.—Bilateral myringotomy was done, and a course of penicillin was given. Vomiting persisted and was severe, semi-solids being slightly better tolerated than fluids. Anorexia was severe, and his weight fell from 15 lb. 8 oz. on admission to 15 lb. 3 oz. five weeks later, when he developed chickenpox and was transferred to the Isolation Hospital, where he later developed bronchopneumonia and died. Necropsy was not done.

Case 7.—A boy born on May 13, 1953, weighing 7 lb. 3 oz., was breast-fed for 3 weeks and then given a mixture of cow's

milk and water. He made good progress up to the age of 4 months, when he developed a febrile response to vaccination. This was followed by vomiting and anorexia. The vomiting became severe and persistent, and at the same time constipation became troublesome. When seen at the age of 5 months he weighed 16 lb. 14 oz., and there was evidence of loss of weight, with muscle hypotonia.

Investigation.—On admission to hospital on April 12 at the age of 11 months his general condition was good and he weighed 22 lb. 6 oz. Hæmoglobin 100%. E.S.R. 5 mm. in 1 hour. White blood cells 11,450 per c.mm. Mantoux test negative. Urine acid: no albumin, no pus cells. Radiographs of the skeleton were normal. For blood chemistry see table v.

Progress.—During his stay in the ward he was happy and contented. Though reluctant and difficult to feed, he had no vomiting, nor was he constipated. His serum-calcium level fell to 10·9 mg. per 100 ml. before discharge.

Discussion

The age of onset and the initial clinical features in case 1 resembled those of either "infantile renal acidosis" or "idiopathic hypercalcæmia of infants with failure to thrive." Though renal acidosis might have been present as a major or associated renal functional defect in the early part of the illness regarding which there are no biochemical data, this diagnosis could not be entertained a year later, when strongly acid urine was obtained. If the initial illness was "idiopathic hypercalcæmia with failure to thrive," then, at variance with Lightwood and Stapleton's (1953) conception of this as a wholly recoverable disease, this child's illness progressed steadily. It is possible that the same alternative of complete recovery or progressive deterioration which faces the child with renal acidosis may be expected for the infant with "idiopathic hypercalcæmia." In some of the cases of the latter disease reported by Lightwood (1952a) and Payne (1952) there was radiological evidence of nephrocalcinosis, and in such cases a reduced renal functional reserve is to be expected. Whether severe cases of this syndrome maintain the metabolic disturbance sufficiently long to develop severe renal damage, dense bones, and mental and physical retardation is still an open question.

In the second year of life our patient (case 1) strikingly resembled the two patients described by Fanconi et al. (1952), in whom, it was suggested, there were inherited congenital anomalies, including the metabolic disturbance. It is possible, on the other hand, that there was an acquired metabolic disturbance, the chief feature of which was hypercalcæmia, which explained the anorexia, vomiting, constipation, failure to thrive, and muscular hypotonia. The convergent squint in each case might have been facilitated by the muscular hypotonia. In each case the diagnosis of congenital heart-disease rested on the finding of a harsh systolic murmur, but Lightwood and Stapleton (1953) suggested hypertension secondary to renal disease as an alternative cause of the murmur. Metastatic calcification of the heart might be a third possible cause. Fanconi et al. (1952) suggested that retarded mental and physical growth were associated congenital defects; but prolonged hypercalcæmia and the resulting anorexia could easily cause physical stunting and possibly also the mental retardation.

The pathogenesis of the severe type of idiopathic hypercalcæmia of childhood remains obscure, and, like Fanconi et al. (1952), we cannot ascribe it with certainty to primary renal disease, primary bone disease, hyperparathyroidism, or hypervitaminosis D.

Histological evidence from the renal biopsy specimen in case 1 does not unequivocally support a diagnosis of primary renal disease; and indeed it is difficult to see how primary renal disease could cause hypercalcæmia. The severe changes that are present could, however, be

TABLE V—BLOOD CHEMISTRY IN CASES 2–7

Case no.	Date	Blood-urea (mg. per 100 ml.)	Calcium (m.eq. per litre)	Calcium (mg. per 100 ml.)	Phosphorus (m.eq. per litre)	Phosphorus (mg. per 100 ml.)	Proteins (g. per 100 ml.)	Bicarbonate (m.eq. per litre)	Bicarbonate (Vols. %)	Chloride (m.eq. per litre)	Chloride (mg. per 100 ml.)	Sodium (m.eq. per litre)	Sodium (mg. per 100 ml.)	Potassium (m.eq. per litre)	Potassium (mg. per 100 ml.)	Magnesium (m.eq. per litre)	Magnesium (mg. per 100 ml.)	Cholesterol (mg. per 100 ml.)	Alkaline phosphatase (K.-A. units)
2	30. 7.53	55	..	..	1·3	2·3	Total 8 (alb. 4·8, glob. 3·2)	22·5	50·4	..	..	..	..	..	..	..	..	..	..
	31. 7.53	51	5·8	11·6	1·3	2·3	..	..	..	97	568	..	..	..	..	..	..	..	..
	6. 8.53	58	6·8	13·6	1·3	2·3	..	20·8	46·6	..	..	..	..	..	..	..	..	..	..
	23. 8.53	..	6·05	12·1	..	..	..	22·7	50·8	111	644	146	335	4·3	17·8	1·75	2·1	..	..
	2. 9.53	..	7·0	14·0	..	..	..	35·0	76·7*	..	..	150	345	5·2	20·3	0·3	0·36	..	..
	16. 9.53	..	5·5	11·0	..	..	..	17·0	37·6	101	585	141	325	..	..	0·43	0·51	..	..
	4. 2.54	30	5·95	11·9	3·1	5·6	Total 5·9 (alb. 4·3, glob. 1·6)	..	..	..	..	..	..	..	..	..	..	250	16
	14. 6.54	25	6·3	12·6	..	..	..	..	..	..	..	..	..	..	..	..	..	200	..
3	19.10.53	66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	27.10.53	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	3.11.53	50	..	..	..	..	..	..	..	102	599	156	358	..	..	..	..	..	..
	5.11.53	..	6·6	13·2	..	..	Total 5·5 (alb. 4·2, glob. 1·3)	13·8	31·0	..	..	..	..	5·1	19·9	..	..	..	..
	6.11.53	..	6·2	12·4	..	..	Total 5·75 (alb. 4·0, glob. 1·75)	..	..	..	..	..	..	..	..	..	..	..	..
	9.11.53	..	6·3	12·6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	31.12.53	50	5·7	11·4	..	..	Total 6·75 (alb. 4·4, glob. 2·35)	..	..	96	556	140	322	4·75	18·5	..	..	..	..
	17. 2.54	60	6·08	12·16	2·6	4·7	Total 7·2 (alb. 4·8, glob. 2·4)	..	..	..	..	..	..	..	..	..	..	210	..
	12. 6.54	72	6·2	12·4	4·0	6·7	Total 7·0 (alb. 5·0, glob. 2·0)	..	..	..	..	..	..	..	..	..	..	140	..
4	27.11.53	40	7·8	15·6	..	..	Total 9·0 (alb. 4·6, glob. 4·4)	17·2	38·5	105	617	143·5	330	5·35	21·0	..	..	..	..
	21.12.53	..	6·0	12·0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	17. 2.54	..	6·05	12·1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	9. 6.54	46	5·75	11·5	..	..	Total 5·75 (alb. 4·2, glob. 1·55)	..	..	..	..	..	..	..	..	..	..	160	..
5	21.12.53	35	5·96	11·92	..	..	..	23·0	52·0	..	..	..	..	..	..	..	..	120	..
	31.12.53	30	5·75	11·5	..	..	Total 6·0 (alb. 4·2, glob. 1·8)	..	..	97	562	144	330	5·13	20·0	..	..	..	..
	17. 2.54	..	5·95	11·9	..	..	Total 5·5 (alb. 3·6, glob. 1·9)	..	..	..	..	..	..	..	..	..	..	..	..
	16. 6.54	34	6·0	12·0	..	..	Total 6·0 (alb. 4·8, glob. 1·2)	..	..	..	..	..	..	..	..	..	..	140	..
6	1. 4.54	..	6·0	12·0	..	..	Total 6·1 (alb. 2·85, glob. 3·25)	..	..	..	..	..	..	..	..	..	..	..	..
	7. 4.54	47	6·5	13·0	3·2	5·8	Total 6·4 (alb. 4·15, glob. 2·25)	19·5	43·0	114	667	163	375	5·3	20·6	..	..	300	..
7	7. 4.54	32	6·2	12·35	..	..	Total 7·25 (alb. 4·8, glob. 2·45)	16·1	36·0	..	..	..	..	..	..	..	..	..	..
	24. 4.54	35	5·65	11·3	..	..	Total 6·75 (alb. 5·0, glob. 1·75)	13·8	31·0	..	..	..	..	..	..	..	..	..	..
	29. 4.54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	160	..
	6. 5.54	25	5·5	10·95	..	..	Total 7·0 (alb. 4·6, glob. 2·4)	21·4	48·0	..	..	..	..	..	..	..	..	160	..

* This specimen was obtained whilst the patient was on an alkaline ash diet.

TABLE VI—CASES 1–7. AGE AT ONSET OF ILLNESS, DIET, SOURCES OF VITAMIN D, AND ADMINISTRATION OF ALKALIS

Case no.	Age at onset of vomiting, constipation, and failure to gain weight (mos.)	Diet	Other sources of vitamin D	Milk of magnesia	Other alkaline medicines	Remarks
1	4	National dried milk from age of 2 weeks*	Cod-liver oil from age of 2 weeks, radiostoleum min. 9 daily after onset of symptoms	After onset of symptoms 1 drachm several times a week	Dinneford's magnesia 1 drachm about twice a week from age of 2 weeks	..
2	5	National dried milk from birth	Cod-liver oil 1 drachm daily from age of 1 month	1 drachm once a week from shortly after birth; even after onset of symptoms never had more than 2 drachms a week	..	..
3	5	National dried milk from birth	Cod-liver oil 1 drachm on two occasions only, at age of 3 mos.	1 drachm on two occasions only before age of 5 mos., after onset of constipation 1 or 2 drachms daily	Dinneford's magnesia given only after onset of symptoms	Parents felt that "cod-liver oil upset patient"
4	3	National dried milk from age of 2 weeks	At age of 5 mos. 1 drachm of cod-liver oil on a few occasions only	1 drachm daily from age of 7 mos.	Dinneford's magnesia 1 or 2 drachms daily from age of 7 mos.	Grey powder 1 every few days from age of 5 mos.
5	4½	National dried milk from age of 11 weeks	Cod-liver oil started at age of 5 weeks, a few drops daily at first, increasing to ½ drachm three or four times weekly at age of 5 mos.	1 drachm daily given "very occasionally"	Dinneford's magnesia 1 drachm daily from the age of 2 weeks; dose doubled at 5 mos., 'Bablets' (containing magnesia, peppermint, and ginger) 1 at night from age of 5 mos.	..
6	7	Breast-fed for 4 mos. National dried milk from age of 4 mos.	Cod-liver oil 1 drachm daily from age of 2 weeks	From age of 4 mos. not more than 1 drachm weekly	None	
7	4	Breast-fed for 3 weeks; cow's milk mixture	Cod-liver oil 1 drachm daily from age of 1 month, malt extract 4 drachms daily from 1 month	After onset of symptoms 1 drachm once weekly	"Gripe water" 1 drachm occasionally	..

* National dried milk contains not less than 280 I.U. of vitamin D per ounce.

reasonably explained as the result of precipitation of calcium in the kidney due to the hypercalcæmia, even though some features—particularly the peripheral cortical destruction—cannot yet be explained entirely satisfactorily. There was, it is true, some evidence of a chronic pyelonephritis, but it was our impression that the pyelonephritis was a low-grade secondary infection in a kidney already damaged by calcinosis.

In describing the bone lesions in case 1 we use the term osteosclerosis in the conventional sense as indicating increased density "to the roentgen ray regardless of the state of hardness" (Golden 1952). The primary bone disease that requires serious consideration in differential diagnosis is osteopetrosis (Albers-Schönberg disease), in which there is often a family history of either osteopetrosis or consanguinity of parents. The blood chemistry is usually normal, and myelophthisic anæmia is common. Hypercalcæmia is rare and, when present, raises doubt about the diagnosis. The clinical features of our case 1 are quite different from those of osteopetrosis (Cassidy et al. 1948, Cohen 1951, Kleinberg 1954).

Parathyroid function was not investigated in case 1, and hyperparathyroidism, either primary or secondary to renal disease, was not excluded. The osteosclerosis would not definitely exclude primary hyperparathyroidism, but we know of no published case of primary hyperparathyroidism in which the findings were comparable with those of our patient. In the 2 cases of Fanconi et al. (1952) functional and histological studies rendered primary hyperparathyroidism a very unlikely diagnosis. Hyperparathyroidism secondary to renal disease cannot be excluded as playing a subsidiary part in the causation of symptoms.

Hypersensitivity to vitamin D has not been satisfactorily excluded as the ætiological factor in case 1. Vitamin D was never given in gross excess, and it was given in concentrated form only after the onset of symptoms at 4 months. The common radiological finding in hypervitaminosis D is decalcification of the skeleton, and we have not seen radiological appearances similar to those of our patient described in patients with hypervitaminosis D.

Creery (1953) draws an interesting parallel between hypercalcæmic marasmus and the syndrome described in adults with peptic ulceration in whom long-continued excessive intake of milk and alkalis leads to hypercalcæmia, metastatic calcification, and, in some cases, osteosclerosis (Burnett et al. 1949). Creery points to the frequency with which alkaline medicines are prescribed in infancy. Field studies of this aspect of infant nutrition are obviously required to identify any possible childhood counterpart to the adult "milk and alkali syndrome." Our patient had had very modest doses of an alkaline medicine before the onset of symptoms, but it is difficult to assess its possible ætiological relationship to the subsequent development of hypercalcæmia.

The six mild cases (nos. 2–7) seen during the past year showed the same initial symptoms as the severe case, and in five of the cases the onset was during the first 6 months of life. All but case 7 had been fed on National dried milk, and four had had regular cod-liver-oil supplements. One had only two doses of cod-liver oil, and one had none at all, before the onset of symptoms. Two had magnesia regularly, two had it occasionally (not more than one dose a week), one had two doses only, and one had none at all, before the illness developed. Alkaline medication therefore is not a constant factor and cannot play more than a contributory rôle in the pathogenesis of the syndrome, if in fact it plays any part. Hypersensitivity to vitamin D does, however, merit serious attention as a possible ætiological factor in these patients. Two had had no supplementary cod-liver oil; but, as National dried milk contains at least 280 I.U. of vitamin D per ounce, even they were having a daily intake of over 1000 I.U. of vitamin D before the onset of symptoms.

The five surviving patients with the milder form of hypercalcæmia showed spontaneous clinical improvement while under hospital supervision and on hospital diet with no added vitamin D and no alkaline medicines. Biochemical recovery has been slower: four patients still have raised serum-calcium levels, and two still have raised blood-urea levels. Clinical follow-up and renal functional studies at a later age will show whether these five patients have indeed a wholly recoverable illness, or whether they will be left with diminished renal functional reserve or other defects. As none of them has radiological evidence of nephrocalcinosis, we are hopeful that recovery will eventually be complete.

An interesting clinical feature is that, whereas patient 1 was never suspected of having congenital heart-disease, patient 3 had a harsh systolic murmur suggesting a small ventricular septal defect. Probably the presence or absence of a harsh systolic murmur (see table I) is of no importance in determining whether the hypercalcæmia is reversible or not.

Summary

The mild and severe types of idiopathic hypercalcæmia in infancy are described.

A case of the severe type with hypercalcæmia, osteosclerosis, nephrocalcinosis (diagnosed by biopsy), and general retardation is described in detail, and the differential diagnosis is outlined.

Six cases of the mild form of idiopathic hypercalcæmia are reported briefly.

The mild and severe types of idiopathic hypercalcæmia may be variants of the same disease process, of which the cause is not known. Primary renal disease and primary hyperparathyroidism seem to be unlikely causes, but hypervitaminosis D (or hypersensitivity to doses of vitamin D usually well tolerated by infants) merits consideration as an ætiological factor. Excessive administration of alkaline medicines may be an aggravating factor.

We wish to thank Dr. W. G. Dangerfield, of the department of pathology, St. Bartholomew's Hospital, London, for the report on plasma electrophoresis in case 1; Dr. H. G. Morgan for help with the use of E.D.T.A.A.; and Dr. C. M. Scott, of Imperial Chemical (Pharmaceuticals) Ltd., for supplying that drug.

ADDENDUM

Since this paper was submitted for publication, the patient with the severe type of hypercalcæmia (case 1) has died. The following are the essential lesions found at necropsy and on subsequent preliminary microscopy:

Kidneys.—These do not show the scarring and shrinkage characteristic of long-standing chronic pyelonephritis; microscopically, exactly the same appearances are seen as those described in the biopsy.

Lungs, Myocardium.—Extensive metastatic calcification.

Parathyroids.—No adenoma and no evidence of hyperplasia.

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IDIOPATHIC HYPERCALCÆMIA IN INFANTS WITH FAILURE TO THRIVE

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With illustrations on plate

MUCH interest has been aroused by the success of biochemical methods in the investigation of the wasted infant. This interest has been further stimulated by recognition of the syndrome of "idiopathic hypercalcæmia, with failure to thrive" (Lightwood 1952a), in which anorexia, vomiting, and constipation are associated with wasting, hypotonia, and elevation of the serum-calcium and blood-urea levels. Clinically the condition simulates infantile renal acidosis; the ætiology is unknown; and spontaneous recovery is the rule.

We here describe 16 cases seen in the Royal Belfast Hospital for Sick Children and the Ava Hospital during the period April, 1952 to June, 1954. 1 case previously reported (Creery 1953) of idiopathic hypercalcæmia with renal impairment, osteosclerosis, craniostenosis, hypertension, and general retardation (Fanconi and Girardet 1952, Schlesinger, Butler, and Black 1952) is not included, because it is at present uncertain what relation this type of case bears to the syndrome under review.

Observations

ÆTIOLOGY

Sex.—There were 11 females and 5 males in the series.

Pregnancy and Delivery.—Pregnancy was normal in 10 cases; in the remainder it had been complicated by considerable vomiting. There were 3 twin pregnancies, one twin from each pair (1 identical, 2 dissimilar) being affected. 5 of the infants were firstborn and 2 were premature. Delivery was normal in 10 cases and of unknown type in 1. There were 3 forceps deliveries, 1 breech, and 1 cæsarean section. 1 infant suffered neonatal asphyxia.

Feeding Before Onset of Symptoms.—5 infants were never breast-fed, 3 were breast-fed for less than a week, and 7 for less than four weeks. 1 infant was breast-fed for two months. Subsequent feeding in 15 cases was with dried milk fortified with vitamin D (7 were fed on full-cream dried milk, 6 on half-cream followed by full-cream milk, and 2 on half-cream milk alone). 1 infant was fed on liquid cow's milk. In several cases mixed feeding had started.

Vitamin D Before Onset.—2 infants did not have vitamin-D supplements. The remainder had supplements varying from 400 to 1600 international units (I.U.) daily; the majority had a daily dose in the region of 800 I.U. An attempt has been made to assess the approximate total vitamin-D intake from a consideration of the known diets and vitamin additions. From this it would appear that 2 infants had about 700 I.U. daily, 6 had 1100–1600, 7 had 1800–2400, and 1 had 3200.

Preceding Alkali Therapy.—7 infants had varying but regular dosage with alkali preparations: 3 had magnesia in some form and 4 had alkaline carminative mixtures.

Preceding Illness and Therapy.—A preceding gastro-enteritis was noted in 2 cases. In 1 of these infants this was associated with pyelonephritis and otitis media. 1 infant was said to have had a severe common cold, 1 a sore throat, and 1 otitis media. In only 1 case was there a history of sulphonamide medication.

SUMMARY OF THE CASES

Case no.	Age at onset (mos.)	Age at recognition (mos.)	Duration to clinical recovery (mos.)	Highest serum-calcium (mg. per 100 ml.)	Highest blood-urea (mg. per 100 ml.)	Follow-up				Other remarks
						Duration (mos.)	Last known serum-calcium (mg. per 100 ml.)	Last known blood-urea (mg. per 100 ml.)	Stature	
1	1½	17	18	16	35	18	10·3	30	Average	Mentally retarded (? not connected with illness)
2	3	13	13	15·9	124	18	12·8	49·7	Below average	Secondary rise in serum-calcium age 27 months
3	9	12	4	13	33	12	8·7	33	Below average	..
4	4	7	11	16·8	92·6	9	12	45	Average	..
5	Birth	17	22	12·3	39	6	11·2	30·3	Average	..
6	2	13	16	14·2	61	3	11·7	43	Average height. Underweight	Urinary infection at follow-up
7	6	12	8	13·8	43	5	10·6	46·4	Slightly below average	Anæmic at follow-up (62%)
8	7	14	14	12·5	46	1	11	28·5	Average height. Underweight	Recurrent tonsillar sepsis
9	3½	7	11	14·5	96	6	11·7	43	Average height. Underweight	Anæmic at follow-up (56%)
10	1½	6	7	13·1	52	6½	11·7	37·5	Below average	.
11	5	11	..	14·5	80	..	..	..	..	Lost sight of ..
12	7½	7½	1	14·7	78	3	12·3	32	Average	..
13	5	9½	..	14·4	98·5	..	..	..	..	Remains in active stage
14	6	11	6	14·1	46·4	1	11·4	36·4	Average height. Underweight	..
15	8	10	..	17·3	100	..	..	..	..	Remains in active stage
16	5	8	..	17·5	105	..	..	..	..	Remains in active stage

THE CLINICAL PICTURE

These infants appeared to thrive at first and the onset of definite symptoms was usually clear-cut, at ages from six weeks to nine months (see table). In 1 infant, symptoms were present from birth. Vomiting—often unspectacular but occasionally severe and projectile—was the initial symptom in 8 cases, and it occurred in all but 1 of the 16. In 4 cases the illness began with constipation and in 3 with refusal to feed. In 1 case vomiting and constipation were noticed more or less simultaneously.

Vomiting tended to be most severe during the early part of the illness and gradually subsided. Periodic exacerbations occurred, but it ceased with the child's recovery. Constipation was obstinate in most cases, the stools being infrequent, small, and hard, and it resisted the household remedies which were given with remarkable perseverance. Proprietary alkali preparations were commonly used regularly (twice or thrice weekly) or daily for periods of weeks or months with a singular lack of success. 12 infants were given magnesia preparations, with or without additional alkaline carminatives or citrate. 1 received an occasional dose of carminative and 1 an occasional dose of magnesia; 2 had no alkali therapy. Other laxatives were frequently given without effect.

All the infants failed to gain weight normally, and some were 4–5 lb. below their expected weights. Definite anorexia was noted in 12 infants and distaste for solids was conspicuous. 11 of the mothers thought that their infants passed an excessive amount of urine. The mothers mentioned thirst in 6 cases, pallor in 5, and "muscular weakness" in 4.

Physical examination revealed little apart from wasting of varying degree. Growth in length appeared to be retarded in 4 of the 11 infants who were measured: head circumference was within normal limits and craniostenosis was not noted.

Despite their poor physical condition most of these infants were alert and contented, though some showed a curious apathy. This pleasant nature, associated with a diminutive appearance, sunken eyes, and a slender neck, has sometimes suggested the diagnosis.

Clinical evidence of dehydration was relatively uncommon (6 cases) and was only seen where vomiting had been severe or long-continued. Though 8 infants were regarded as pale, anæmia was not a feature of the illness: hæmoglobin values were commonly within normal limits for age and in only 4 cases were they below 75% (59%, 60%, 65%, and 70%). Only 1 infant was regarded as mentally retarded. Hypotonia—involving particularly the legs and sometimes extreme—was usual (14 cases). Other less constant findings were unexplained episodes of pyrexia (8 cases), fæcal masses in the colon (6 cases), soft apical systolic murmurs (3 cases), and hypertension (2 cases out of 13 in which blood-pressure readings were made). Intercurrent infections (colds, bronchitis, tonsillitis, otitis) were seen in 6 cases. After periods ranging from one to twenty-two months (see table), vomiting finally stopped, appetite slowly improved, constipation lessened or disappeared and the infants began to gain weight and strength.

THE BIOCHEMICAL PICTURE

In all but 2 cases the initial examination of the serum showed a calcium level above 12 mg. per 100 ml., and in some cases it was as high as 16–17 mg. The blood-urea level was almost always raised, the mean being 54 mg. per 100 ml. The highest values obtained for calcium and urea in each case are shown in the table. It should be noted that some of these values were probably in part attributable to dehydration, as shown by rises in the specific gravity of the plasma. Inorganic-phosphorus levels were within the normal range for children of this age, the mean value being 5·6 mg. per 100 ml. Values for

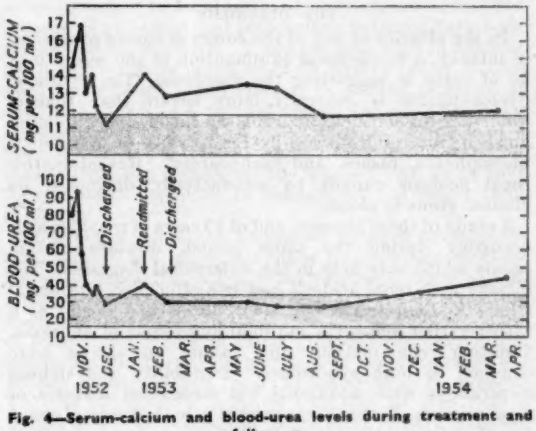

Fig. 4—Serum-calcium and blood-urea levels during treatment and follow-up.

sodium, chloride, and potassium were normal. The alkali reserve was generally within normal limits, but occasionally a little high. Estimation of plasma-proteins by salt fractionation gave normal readings (with an occasional high total value) the albumin/globulin ratio being normal. Electrophoresis on paper (13 cases) showed in 7 cases an increase in the α_2-globulin at the expense of the β-globulin: in 2 cases the γ-globulin was also increased. Alkaline phosphatase occasionally showed a slight rise, and in 3 children the serum-cholesterol was raised. Serum-magnesium (7 cases) was within normal limits of 1–3 mg. per 100 ml. The changes in the serum-calcium and blood-urea during the illness are illustrated in the chart of a typical case (fig. 4). The raised calcium, paralleled by a raised urea, characterises the active stage of the condition; reversion to rather high normal values takes place after clinical recovery. In some cases the blood-urea showed a much slower return to normal.

The urine was examined in 15 cases. The reaction was varied: only 1 infant passed a persistently alkaline urine. Proteinuria was not a feature, and on microscopy a few pus cells were seen. 1 infant, however, had a pyuria with a heavy growth of *Staphylococcus aureus* and proteus. Scanty growth of *Escherichia coli* was found in 6 cases and scanty proteus in 4; in 4 cases the urine was sterile. In 7 cases chromatography of the urine was normal; 1 case showed excretion of phenylalanine in unusual quantity, and 1 of proline.

OTHER INVESTIGATIONS

On radiography, calcification in the kidneys was not detected in any case. As excess of intestinal gas commonly obscured the renal tracts, straight radiography and pyelography (2 cases) gave unsatisfactory results. The density of the skull, pelvis, vertebræ, and thoracic cage always appeared to be within normal limits. Radiographs of the wrists were taken in 15 cases: these were normal in 3 cases but 12 showed transverse bands of increased density at the metaphyseal margins of the lower ends of the radius and ulna with a similar appearance in the metacarpals in some cases (figs. 1 and 2). In 8 cases a similar appearance was noted in the femur and tibia (fig. 3). These bands were single, narrow, and well defined, quite unlike "growth lines" (which were present in addition in 4 cases); they were reminiscent of the dense lines seen in lead poisoning. In 1 child the bands were seen to develop as the illness progressed. In 4 children followed to recovery, the bands have disappeared. In 7 cases an additional feature has been a zone of slight rarefaction in the metaphysis, proximal to which the normal density of the diaphysis has been resumed.

Electro-encephalography (3 cases) and electrocardiography (2) showed nothing abnormal.

THE DIAGNOSIS

In the absence of any of the common causes of wasting in infancy, a biochemical examination of the serum may be of value in suggesting the diagnosis. The pyuria of pyelonephritis is generally more severe than that of idiopathic hypercalcæmia, and the latter can be distinguished from pink disease by the absence of irritability, photophobia, rashes, and tachycardia. But idiopathic renal acidosis cannot be satisfactorily diagnosed on clinical grounds alone.

A study of these 16 cases, and of 13 cases of renal acidosis occurring during the same period, displays certain points which may help in the differential diagnosis. The infants with renal acidosis had less often had vitamin D added to their feeds, and their illness had begun at a rather earlier age. The cardinal symptoms of anorexia, vomiting, constipation, and failure to thrive were common to both syndromes. Irritability and sighing respirations were additional but inconstant features of renal acidosis. Wasting was present in both groups of cases. Fæcal masses, clinical dehydration, and unexplained

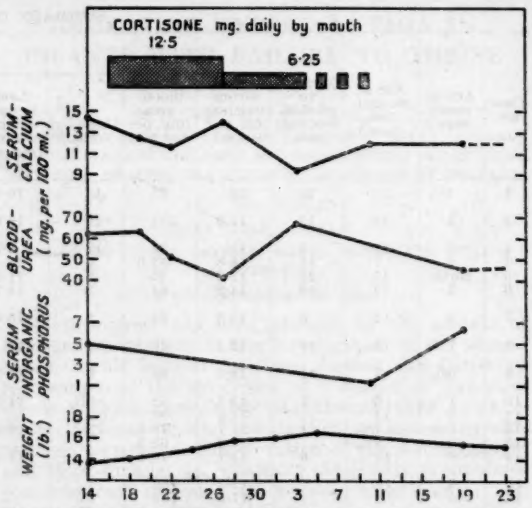

Fig. 5—Blood calcium, phosphorus, and urea levels during administration of cortisone.

pyrexia were more often seen in renal acidosis, whilst hypotonia, uncommon in renal acidosis, was characteristic of the hypercalcæmic syndrome. Urine containing a trace of protein, and alkaline or neutral in reaction, was characteristic of renal acidosis; in the hypercalcæmic cases the reaction was variable and proteinuria was absent. Minor pyuria was found in both. Radiological sclerosis of the metaphyseal margin, similar to that noted in idiopathic hypercalcæmia, has been observed in several cases of renal acidosis. The final distinction was made on the serum chemistry. The essential difference was the finding of a persistently lowered alkali reserve in the cases of renal acidosis. This acidæmia was not a feature of idiopathic hypercalcæmia, the alkali reserve being generally within normal limits or in some cases slightly raised.

A transient elevation of the serum-calcium was found in 9 of the 13 cases of renal acidosis. In 3 cases this was noted on the original biochemical examination but disappeared when alkali therapy commenced. In 1 case hypercalcæmia was found on the first examination and once again during the course of therapy. 2 other cases showed raised serum-calcium levels as isolated incidents during the course of treatment and while acidosis was still present. In 1 case the hypercalcæmia persisted after return of the alkali reserve to normal. In 2 cases a high serum-calcium was found on one occasion after apparent recovery from the renal acidosis. In all other respects these cases were typical of renal acidosis.

TREATMENT

Of the 16 children, 14 were admitted to hospital and the other two were observed as outpatients. 13 received no treatment apart from symptomatic measures to relieve constipation and (when present) dehydration and infection. These infants were given their usual diets without vitamin-D supplements. So as to reduce the vitamin-D intake further, a change was usually made from vitamin-D-fortified milks to liquid cow's milk. In several cases a synthetic diet of low calcium content and free of vitamin D was given for short periods: it was composed of soya flour, liquid glucose, peanut oil, and arrowroot made up with water and contained about 75 mg. calcium per pint. In 2 of these cases, in which the periods of trial were probably too short, the results were inconclusive; but in 1 case this diet produced a gratifying response both clinically and chemically. In

1 infant a course of cortisone was given: the dose was 12·5 mg. daily by mouth, with gradual withdrawal: potassium chloride and oxytetracycline (terramycin) were given prophylactically, and a normal diet was continued. Clinical improvement was striking and the gain in weight was accelerated. The changes in the serum (fig. 5) comprised a fall in calcium, phosphorus, urea, and potassium levels with subsequent rise on cessation of therapy which was followed by a fall in weight. The fall in the phosphorus level was particularly marked. The urinary excretion of calcium was not estimated. It is possible that this child was already entering the recovery stage and that some of the changes were non-specific effects of cortisone. Nevertheless the biochemical response is of interest and merits further study. Similar findings were reported by Dent, Flynn, and Nabarro (1953) in cases of sarcoidosis with hypercalcæmia and impairment of renal function.

FOLLOW-UP (SEE TABLE)

3 infants remain in the active stage of the disease and 1 has been lost sight of. 12 have been followed from apparent clinical recovery for varying periods. 4 of these have apparently regained their normal rate of growth and reached their expected height and weight, but 8 still remain below their expected stature. 4 of these 8 still show blood-urea levels at or slightly above the upper limit of normal, in 1 case even after eighteen months. Urine at follow-up has shown minor pyuria (" occasional pus cell ") in 5 cases and scanty infecting organisms in 7. 1 infant had a florid *Esch. coli* urinary infection. 2 infants had become anæmic.

Discussion

The clinical and chemical features of these cases are typical of the condition as described by Lightwood (1952a and b) and Payne (1952). In view of the known tendency to spontaneous recovery, and the lack of hypophosphatæmia, hyperparathyroidism appears an unlikely cause. It has been suggested (Creery 1953) that alkali medication might be a causal factor, but in the present series the syndrome has been seen to develop in the absence of such therapy. Similarly there is no direct evidence to implicate previous pyelonephritis as an ætiological agent, and the pyuria commonly found is probably secondary in nature (Lightwood 1952b).

Smith (1951) stated that ingestion of increasing amounts of calcium led to larger fæcal losses but also to surprising degrees of increased retention, and that the degree of retention depended mostly on the amount of calcium in the infant's diet, which is 4–6 times as great with cow's milk as with human milk. Stearns (1939) observed that retention of calcium was much greater when vitamin D was added, especially if the diet was alkaline in ash; that infants fed with ample vitamin D tended to have serum-calcium levels at the upper limit of normal; and that the urinary excretion of calcium (which she said was normally under 20 mg. in twenty-four hours) was higher in those infants who were fed on cow's milk. It is known that increased calcium excretion through the kidneys may initiate tubular calcification (Albright and Reifenstein 1948, Dufault and Tobias 1954) and further that chronic hypercalcæmia may give rise to hyalinisation of the glomeruli (Dent, Flynn, and Nabarro 1953) with subsequent renal impairment and azotæmia.

Thatcher (1936), in his report of a case which presented a clinical picture similar to the syndrome under discussion, attributed the illness to vitamin-D intoxication, although the intake had not been markedly excessive by accepted standards. Variation of personal sensitiveness to vitamin D was suggested by Bicknell and Prescott (1942). Of interest in this connection is the observation of Jeans (1950) that vitamin D in a daily dosage of about 1800 I.U. may give rise to anorexia, loss of weight, and retardation of linear growth. He regarded these as mild manifestations of hypervitaminosis D during therapy of an order usually considered reasonable and harmless. He also pointed out that an additional feature of vitamin-D intoxication in infants was a dense deposition of mineral in the zone of provisional calcification in the metaphyses of long bones, this deposition being made at the expense of the diaphysis. Similar findings had previously been reported by Ross and Williams (1939), and further elaborated by Ross (1952), who noted in some cases a zone of rarefaction proximal to the dense line, and periosteal changes. Lightwood (1953), in seeking an explanation for the hypercalcæmia, has put forward the hypothesis that there may be an abnormal sensitivity to vitamin D in these children. Unequivocal evidence of such a sensitivity is difficult to obtain, especially as it may be only temporary.

In one of our children in whom the serum-calcium had returned to normal without specific treatment and who was receiving a high calcium intake, the addition of 2000 I.U. vitamin D daily was accompanied by a rise in the serum-calcium from 11 mg. per 100 ml. to 12·4 mg.; in a period of two weeks the blood-urea rose from 36 mg. per 100 ml. to 46 mg. Yet on continuing the vitamin D for a further ten days the serum-calcium fell to 11·4 mg. and the blood-urea to 36·4 mg. Throughout these changes the child continued to improve clinically.

If, however, this postulate of abnormal sensitivity is correct, the radiological changes in the long bones of our cases, similar in nature to those described in hypervitaminosis D, are probably of significance.

In our series there is clear evidence for high calcium intake from early infancy. The low rate and short duration of breast-feeding is notable, and no example of the syndrome has so far been seen in a fully breast-fed infant. Evidence for hypercalciuria is less definite. Reliable figures for twenty-four-hour urinary excretion of calcium were obtained in 7 cases, the figures being 67·1, 54, 48·2, 40, 50·5, 60·7 and 47·75 mg.; but none was obtained in the early stages of the disease. If one accepts Stearns's figure of 20 mg. as normal, these figures probably represent increased levels of urinary calcium. On the other hand Knapp (1947) gave normal figures of 1–82 mg. daily for infants under six months old fed on cow's milk and added vitamin D; so there seems to be considerable variation from infant to infant. In all but 2 of our cases vitamin-D intake had been more than adequate by accepted standards, and in 5 cases it was over 2000 I.U. daily. Calcium and vitamin-D intakes of this order make it probable that there was alimentary over-absorption of calcium, which could well be the basis of the syndrome. In artificially fed infants, 30–50% of ingested calcium is said to be retained (Eliot and Park 1950). Several four-day calcium balance experiments in this series have had to be abandoned or the results discarded because of vomiting, and satisfactory balances have been carried out on 3 infants. 2, fed on diets high in calcium (such as they were accustomed to receive before admission) and without added vitamin D, showed retention of 57% and 56·7%. A further infant, fed on vitamin-D-fortified milk with a high total calcium content had a retention of 41·5%. These experiments, again, were not made in the early stages of the disease. We think that they indicate retention of calcium at the upper limit of normal.

If hypercalcæmia can be caused by such overabsorption, most if not all of the other findings can be satisfactorily explained. Anorexia, vomiting, constipation, muscular weakness, and hypotonicity are all probably related in some part to the hypercalcæmia per se. Loss of weight and failure of linear growth could result from insufficient nutrition. Impairment of renal function will follow hypercalcæmia and hypercalciuria if present. Tubular calcification may be sufficient to give rise to pyuria and may predispose to the mild urinary infection so commonly found. Polyuria and thirst are presumably

of renal origin. Harris (1954) has pointed out that sulphadimidine can adversely influence renal function in these cases, and such therapy is rightly condemned. Changes in the plasma-proteins may be compensatory and directed towards the carriage of the increased serum-calcium. It is tempting to regard the electrophoretic evidence of an increased α_2-globulin as analogous to the increase in the copper-carrying protein cæruloplasmin in hepatolenticular degeneration (Holmberg and Laurell 1947, 1948). Changes in γ-globulin concentration may be the result of intercurrent infection. The relatively minor changes which we have noted in the long bones of our cases seem likely to be related to interference with growth in combination with hypercalcæmia and increase in the "calcium-phosphorus product" (Creery 1953, Harris 1954). The hypercalcæmia sometimes found in idiopathic renal acidosis is at present unexplained: it may arise in a way similar to that suggested above, or it may be related to changes in the acid-base balance of the blood.

To prevent this condition it would seem that we must constantly encourage breast-feeding and discourage unnecessarily large doses of vitamin D especially when vitamin-fortified dried milks and foods are being used. A rational therapy should include a diet low in calcium and free from vitamin D, such as has recently been suggested by Ferguson and McGowan (1954). From our experience we cannot say definitely how long this treatment should be continued, but we think that it is of most value to tide the infant over the acute stage of the illness and should be followed by a gradual return to normal feeding without excessive milk and with no added vitamin D. The results of such treatment may perhaps be regarded with some scepticism in the light of the spontaneous recovery which can confidently be anticipated.

The immediate prognosis is good, and all our infants have so far survived. A long follow-up will be needed to determine whether renal function remains unimpaired in those cases in which the blood-urea is still raised, and to see whether normal stature is always attained.

Summary

The clinical, chemical, and radiological features of 16 cases of idiopathic hypercalcæmia of infants, with failure to thrive, are described.

The only constant ætiological factor is a high calcium intake from early infancy, usually associated with a more than adequate amount of vitamin D in the diet.

The possible mechanism of production of the syndrome, based on alimentary over-absorption of calcium, is discussed. The prophylaxis, treatment, and prognosis are outlined.

We are indebted to Prof. F. M. B. Allen and Dr. J. A. Smyth for their help at all stages of this study. We wish to thank Dr. M. J. L. Frazer, Dr. J. B. T. Logan, Dr. V. K. St. G. Breakey, Dr. W. A. B. Campbell, and Dr. A. A. H. Gailey for permission to include cases in the series; Dr. N. A. J. Carson for much help with the biochemical investigation; Dr. D. Boyd and Dr. H. B. McDowell for radiological assistance; Dr. O. D. Fisher and Dr. C. M. B. Field for clinical summaries of some of the cases; and Dr. C. E. Dent for advice. Our thanks are also due to those members of the resident medical, nursing, laboratory, radiographic, and secretarial staffs whose coöperation has been so greatly appreciated.

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INGUINAL HERNIA REPAIRED WITH ANTERIOR RECTUS-SHEATH FLAP

ANALYSIS OF 134 OPERATIONS

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THIS paper reviews the results of 134 operations in which an anterior rectus-sheath flap was used in the repair of inguinal hernia. They were performed in 1947–51 by the surgical unit of St. Bartholomew's Hospital where this method is used in all cases in which the anterior rectus sheath is of sufficiently good material. The follow-up took place in 1952, and though 15 patients could not be traced, 109 were examined by me and the remaining 10 replied to a questionnaire. The period since operation varied from one to four years.

Of the 119 patients traced, 3 were women. 88 of the operations were for indirect and 31 for direct hernia, 11 being done on recurrent hernia. 1 operation was performed as an emergency for strangulation. 12 of the patients had chronic bronchitis or emphysema at the time of the operation. 31 patients were under forty years of age, 76 aged between forty and sixty, and 12 over sixty.

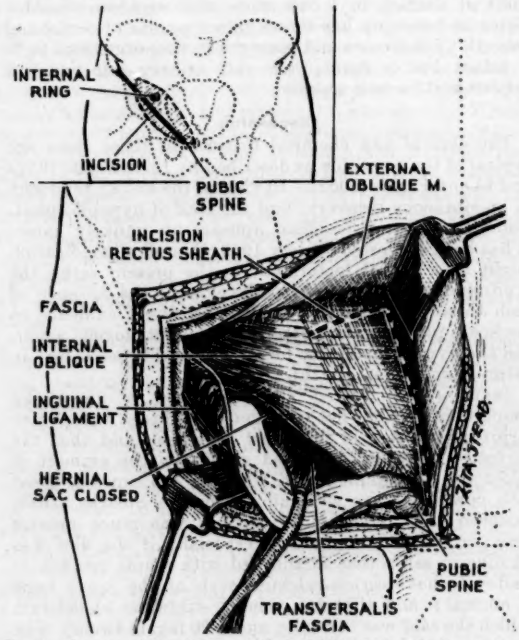

Fig. 1—Upper register shows position of incision in relation to bony landmarks; lower register shows external oblique muscle retracted and area from which flap of rectus sheath is to be taken (interrupted lines).

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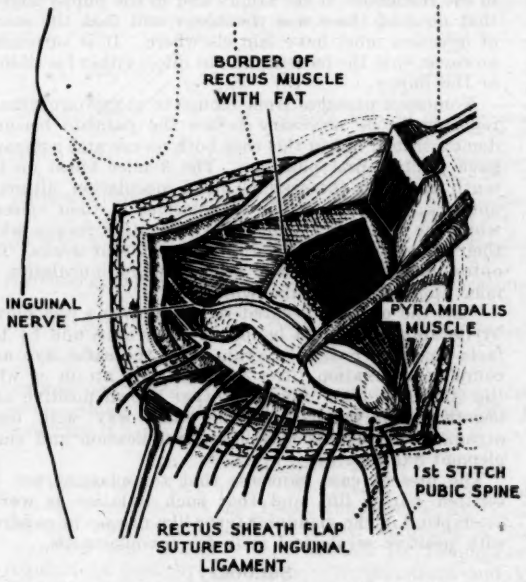

Fig. 2—Flap of rectus sheath turned down and sutured to inguinal ligament.

The Operation

An anterior rectus-sheath flap is cut so that its medial border coincides with the line of fusion of the external oblique aponeurosis with the sheath and its length is somewhat more than half the length of the inguinal ligament (fig. 1). It is turned down behind the spermatic cord and sutured to the inguinal ligament (fig. 2). The operation is simpler in women because of the absence of the spermatic cord. At the medial end the first stitch holding the flap is passed down to the periosteum of the pubis. At the lateral end the flap is sutured beyond the internal ring and thus slings the cord slightly laterally as it emerges from the ring.

Patients with chronic chest infections are usually admitted several days before operation so that they can be given physiotherapy in the hope of preventing complications. The patients get out of bed on the second or third postoperative day and are discharged after ten days. They are instructed in breathing and abdominal exercises, which they are told to continue on their return home.

Results

There were 4 recurrences (3·4%):

Year	*Operations*	*Recurrences*
1947	26	2
1948	21	1
1949	38	1
1950	28	0
1951	21	0

All these recurrences were in men, and 1 in each of the third, fourth, fifth, and sixth decades of life. 3 of the patients were engaged in heavy work, and 3 of the hernias were direct. 2 of the patients had emphysema, and in both of these the recurrence took place within two months of operation. Of the other 2 recurrences one was observed at two and three-quarter years, and the other four years, after the operation.

It not infrequently happens that after repair of a hernia a bulge is seen in the region of the inguinal canal, and the exact degree of bulging which can be classified as a recurrence is bound to vary from observer to observer. I noticed a definite bulge in 4 patients, whom I did not classify as having recurrences. None of the recurrent hernias operated on subsequently recurred.

It has been suggested that there may be a danger of causing weakness of the abdominal wall where the rectus-sheath flap has been taken. In only 1 patient examined was there any evidence of such weakness: this was a man aged seventy who had a very definite bulge over the lower end of his rectus, but no recurrence of the hernia and no symptoms.

There were very few postoperative complications, and no patient died as a result of the operation. A severe chest infection developed in 1 patient with emphysema, although the operation was performed under local anæsthesia; and this suggests that willingness to cough after the operation is more important than the type of anæsthetic. There were 2 postoperative hæmatomas severe enough to delay the patient's discharge from hospital, and 1 case of postoperative retention necessitating prostatectomy.

Conclusions

The follow-up was short, particularly in the latter part of the series; but, if it is true that at least half of all recurrences take place in the first postoperative year, the impression given by my findings may be fairly accurate.

These operations were performed in a teaching unit, not by one or two surgeons specialised in this particular operation: 104 of them were done by twelve different surgeons and 15 by house-surgeons.

It is not suggested that this is the only method that should be used: in a small proportion of patients it is clearly contra-indicated because the rectus sheath is poor. But it has given good results in a reasonably large number of cases.

To keep patients in bed for several weeks after a hernia operation seems to be unnecessary. This was done in the early part of the series, but the present practice of getting them up on the second or third postoperative day does not seem to have had any adverse effects.

I would like to thank Sir James Paterson Ross for allowing me to follow up these cases under his care and for his help and advice.

TOXOPLASMA ADENOPATHY IN A CHILD WITH ISOLATION OF THE PARASITE

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IN a preliminary communication (Cathie 1954) attention was drawn to the association of a glandular-fever-like illness in children with positive serological tests for toxoplasmosis. As toxoplasmas had not been recovered from any of the cases at that time some reserve was felt as to the precise worth of these positive tests. From one of these children toxoplasmas have now been grown, and the case is reported here in more detail.

Case-record

The patient, a boy aged 5 years, was seen in the outpatient department on account of enlarged lymph-nodes in both posterior triangles of the neck of three weeks' duration. Lymph-nodes elsewhere were not palpable, nor was the spleen; and at the times the patient was seen he was afebrile. Since there was no focus of infection to account for the lymphadenopathy the child was referred for a Paul-Bunnell test and a blood-count. The white blood-cell count was 14,000 per c.mm. with 6% eosinophils but no glandular-fever cells; the Paul-Bunnell test was negative. Toxoplasma tests on March 18, 1954, showed a dye-test titre of 1 : 512 and a complement-fixation titre of 1 : 32.

The patient's mother, brother, and two sisters had negative dye and complement-fixation tests, while the father had a

negative complement-fixation test and a dye test positive at 1 : 16—a normal finding.

Three months previously the family had acquired a puppy, and this too had negative dye and complement-fixation tests.

On April 1 the patient's dye-test titre was 1 : 1024, and the complement-fixation titre 1 : 128. On May 17 and June 10 the dye-test titre was 1 : 1024 and the complement-fixation titre 1 : 64.

No treatment was given, and on June 6 the cervical nodes were no longer palpable and the child was in good health.

Isolation of Toxoplasmas

On April 20 sterile blood from the patient was taken into citrate and inoculated intraperitoneally into 6 mice and 3 guineapigs. On April 30 3 of the mice were killed and their spleens ground up and passaged to 3 further mice. On May 6 these further mice all had peritoneal exudates teeming with toxoplasmas. The remaining 3 mice inoculated on April 20 had their spleens passaged on May 25 to further mice, without isolation of toxoplasmas. Of the 3 guineapigs inoculated on April 20 2 were killed ; their spleens were ground up and passaged into 3 mice intraperitoneally. On May 6 these mice also had toxoplasma-containing exudates.

Smears of the patient's saliva stained by Gram's method contained something which might conceivably have been toxoplasmas. On March 31 saliva was collected from the patient, centrifuged, and incubated with a small volume of saline containing 5 units of streptomycin per ml. for one hour. The deposit from the saliva was inoculated intraperitoneally into 6 mice ; and on April 30 the spleens of these mice were ground up and passaged to 6 further mice, which on May 6 all developed toxoplasma-containing exudates. Intracerebral inoculation was not attempted.

On May 17 repeat inoculations of the patient's blood and saliva were negative.

Controls

24 stock mice were given intraperitoneal streptomycin-saline such as was used to suspend the saliva deposit, and their spleens were passaged twice without isolation of toxoplasmas. Spleens from 3 stock guineapigs were ground up and passed into mice, and the mice spleens were subsequently passed into further mice without ill effect. Repeated attempts to isolate toxoplasmas from other mice have been unsuccessful. There is no evidence, therefore, that toxoplasmosis is endemic in our animal stock.

Identification of Toxoplasmas

The strain of toxoplasma isolated has been passaged serially eight times in parallel with our known strain of toxoplasma. Its biological effects on mice and guineapigs are the same as those of the standard strain. Toxoplasmas of the new strain have been in use in parallel with the old strain in performing the dye test on more than fifty sera, and have given identical results. An antigen prepared with the new strain of toxoplasmas on the chorio-allantoic membrane of the developing chicken's egg has given exactly the same results with known positive and negative sera as does our standard antigen.

Discussion

The toxoplasma is an obligate intracellular parasite, and domestic and wild animals have been shown to act as a reservoir. In this country as many as half of the adult population have antibodies to the toxoplasma (Cathie and Dudgeon 1953). We do not believe that half of the adults have at some time eaten uncooked rabbit (Pay 1953) or hare (Christiansen and Siim 1951) or other animal harbouring the parasite in its cells ; and accordingly we have considered other modes of transmission, including a direct contact spread in the saliva by kissing. Our patient's was the first saliva to be examined ; in stained films the prejudiced eye recognised toxoplasmas, and from it toxoplasmas were isolated in mice. If kissing is the mode of spread, the negative serological findings in the remainder of the family and in the puppy suggest that none of these was the kisser and that the source of infection must have lain elsewhere. It is surprising, however, that the patient did not infect either his siblings or the puppy.

Numerous passages from mouse to mouse are usually reported to be necessary before the parasite becomes demonstrable, but in this case both mouse and guineapig gave positive first passages. The 3 mice killed on the tenth day after the original blood inoculation, although not sick, had recoverable toxoplasmas in their spleens, while the remaining 3 mice gave negative results when their spleens were passaged after nearly four weeks. The optimum time for passage after primary inoculation of mice appears to be unknown.

That the parasite isolated was toxoplasma was shown by its appearance and biological behaviour, and by the facts that the patient's serum gave the same dye and complement-fixation titres with the new strain as with the standard strain and that other known positive and negative sera behaved in the same way with both organisms as regards cytoplasm modification and complement fixation.

The present case indicates that toxoplasmas can be isolated during life, and that such isolation is worth attempting in the glandular-fever-like disease in children with positive serological tests for toxoplasmosis.

Summary

A child is described in whom there were transient lymph-node enlargement, eosinophilia, and toxoplasma antibodies.

Toxoplasmas were isolated from the patient's blood and saliva.

I am indebted to Mr. G. W. Cecil for much technical assistance.

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HÆMOGLOBIN STANDARD

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MOST hæmoglobinometers now in use in this country, and to an increasing extent in other countries as well, are standardised by reference to the British Standards Institution Haldane hæmoglobin standard (B.S. 1079/1942). This is a permanent colour standard, trichromatically defined in accordance with the specifications proposed by the Commission Internationale de l'Eclairage in 1931. Its setting up was described by Donaldson et al. (1943). These workers aimed at reproducing the colour of Haldane's original carboxyhæmoglobin standard (Haldane and Smith 1900, Haldane 1901), which they supposed to have represented 13·8 g. of hæmoglobin per 100 ml. of blood. Haldane's intention had been to prepare a standard representing the mean normal level for healthy males. Donaldson et al. (1943) believed that the new B.S.I. standard had the same colour as Haldane's original standard and was equivalent to 13·8 g. of hæmoglobin per 100 ml. of blood.

I do not propose to consider here whether the B.S.I. standard is really equivalent to Haldane's original standard (which seems unlikely) or whether it represents the mean level for healthy males (which is certainly not true today). It is best regarded as an arbitrary standard. But, since many clinical pathologists wish to express the results of hæmoglobin estimations as grammes of hæmoglobin per 100 ml. of blood, and since the possibility of

IRON CONTENT OF HÆMOGLOBIN

Reference	Percentage of iron in Hb	Remarks
Zinoffsky (1886)	0·335	Mean of 8 determinations, range 0·330 to 0·338
Hüfner (1894)	0·336	Mean of 5 determinations, range 0·328 to 0·342
Butterfield (1909)	0·335	Mean of 16 determinations, range 0·324 to 0·339
Morrison and Hisey (1935)	0·338	Mean of 3 determinations, range 0·336 to 0·340
Bernhart and Skeggs (1943)	0·340	Mean of 10 determinations, range 0·3391 to 0·3407
Drabkin (1945)	0·338	Individual figures not recorded

expressing results in this way facilitates international comparisons, the hæmoglobin equivalent of the B.S.I. standard is a matter of considerable importance.

Iron Content of Hæmoglobin

The work of King et al. (1943, 1944), Douglas et al. (1943), Macfarlane et al. (1944), and King et al. (1947) showed conclusively that the initial valuation of the standard was wrong. They studied its hæmoglobin equivalent both by gasometric determinations and by estimation of the blood-iron level, and finally selected the iron figures to form the basis of a new definition of the standard. This decision was undoubtedly a wise one, for reasons which were fully set forth. King et al. (1947) recommended that the standard should be regarded as equivalent to 14·8 g. of hæmoglobin per 100 ml. of blood. This figure was based on a large number of blood-iron analyses, the results of which were converted into g. of hæmoglobin per 100 ml. of blood on the assumption that crystalline hæmoglobin contains 0·334% of iron. The reliability of this estimate of 14·8 g. per 100 ml. clearly depends not only on the accuracy of the blood-iron analyses but also on the correctness of the value taken for the percentage of iron in hæmoglobin. There can be no doubt that the blood-iron estimations were made with a highly satisfactory degree of precision, but the same confidence cannot be reposed in the value of 0·334% taken for the iron content of crystalline hæmoglobin.

The authority given for this figure (0·334%) is Hüfner (1894). In fact Hüfner gave 0·336%, and this was the mean of only five determinations (some of which were made by Jacquel) ranging from 0·328 to 0·342%. Hence, quite apart from the misquotation, Hüfner's estimate is by no means certainly reliable to three significant figures.

A search of published reports reveals six determinations of the percentage of iron in crystalline hæmoglobin, apart from early measurements which were obviously badly out. These six determinations are shown in the accompanying table.

Inspection of the published information suggests that the estimate of Bernhart and Skeggs (1943) is the best, and indeed the only one which could be regarded as correct to three significant figures. Moreover, if hæmoglobin contains 0·340% of iron, 1 g. of hæmoglobin should react with 1·36 ml. of carbon monoxide (the atomic weight of iron being taken as 55·85 and the gramme molecular volume as 22·404 litres). This figure is the same as that found experimentally by Morrison and Hisey (1935). Yet a third reason can be adduced for using the estimate of Bernhart and Skeggs (1943) in computing the hæmoglobin equivalent of the B.S.I. standard. Their technique was compared by King et al. (1948) with the titanous-chloride method used in the iron analyses studied by King et al. (1947), and good agreement was shown. No such comparison is available for the techniques used in any of the other estimates of the percentage of iron in crystalline hæmoglobin.

If the estimate of Bernhart and Skeggs (1943) is used, the hæmoglobin equivalent of the B.S.I. standard is 14·5 g. per 100 ml. instead of 14·8 g. per 100 ml. This minor revaluation of the standard is of no great practical importance, and, indeed, cannot be regarded as indubitably permanent, since better estimates of the iron equivalent of the standard or of the percentage of iron in hæmoglobin may possibly appear later. Nevertheless the experimental evidence available suggests strongly that a value of 14·5 g. per 100 ml. is correct to three significant figures, and it is reasonable to hope that no further change will be needed. In any case, in view of the international importance of the standard it seems preferable that a conventional figure for its hæmoglobin equivalent should rest on sound experimental work rather than on a misquotation.

Summary

It is suggested, on the basis of evidence collected from published reports, that the British Standards Institution Haldane hæmoglobin colour standard should be valued at 14·5 g. of hæmoglobin per 100 ml. of blood instead of 14·8 g. per 100 ml. as has been customary hitherto.

I am indebted to Sir Howard Florey, F.R.S., for permission to publish; to Dr. R. G, Macfarlane and Mr. J. R. P. O'Brien for much helpful advice and criticism; and to Sir Charles Harington, F.R.S., Prof. E. J. King, and Dr. A. H. T. Robb-Smith who have kindly read the manuscript.

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FATAL POST-RADIATION PNEUMONITIS

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With illustrations on plate

THE anatomical and histological appearances of lungs damaged by radiation have been recorded by Continental and American writers both in the laboratory animal (Engelstad 1934, Ludin and Werthemann 1930, Warren and Gates 1940, Tullis 1949) and in man (Hines 1922, Evans and Leucutia 1925, Groover et al. 1927, McIntosh 1934, McIntosh and Spitz 1939, Schairer and Krombach

Fig. 3—Lungs showing depressed scars on lateral surface.

1939, Rajewsky 1939, Freid and Goldberg 1940, Engelstad 1940, Warren and Spencer 1940, Jacobsen 1940, Liebow et al. 1949, Bergmann and Graham 1951). The only reference that we have been able to find in British journals is a case-report by Hutchison (1953).

Though uncommon the condition is important in several ways. Firstly, it may be very difficult to differentiate, during life, from pulmonary metastases, lung involvement by reticulosis, or pneumonia. Secondly, besides producing a severe illness it may result in permanent limitation of exercise tolerance and in chronic or recurrent infection of the lower respiratory tract. And thirdly, it may be fatal. Three of our patients have died from pulmonary radiation damage, and we here describe one of these cases in which necropsy was performed.

Case-record

The patient was a man aged 30, a clerk. A tuberculous gland had been removed from his neck when he was 12, but otherwise he had always had good health until June, 1953, when progessive painless enlargement of the glands on the right side of the neck developed. He was first seen four months later when firm discrete glands were palpable in right and left cervical regions and in both axillæ. A chest radiograph showed that the hilar and paratracheal glands were also enlarged, but the lung fields were clear (fig. 1). His blood-count was normal and the spleen and liver were not palpable. A gland biopsy from the right supraclavicular fossa showed the typical appearances of Hodgkin's disease.

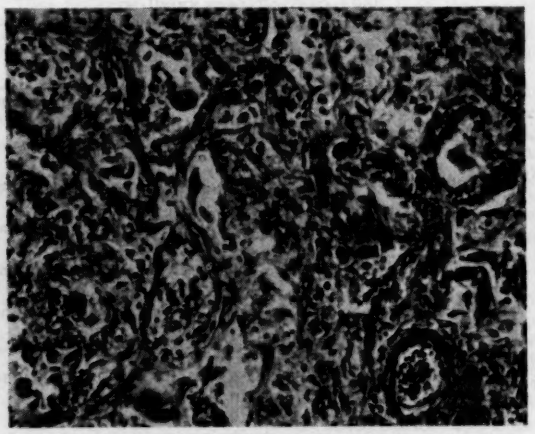

Fig. 4—The alveolar walls show fibrosis and thickening. Macrophages and large aberrant cells, some of which are binucleate, are present in the lumen. In places these large cells appear to be desquamated from the alveolar walls. (Van Gieson. × 172.)

RADIOTHERAPY AND ITS EFFECTS

He was treated by deep X-radiation, a calculated minimum dose of 3000r in the mediastinum being given by cervicothoracic baths over a period of twenty-six days. First-degree skin erythema appeared, but otherwise the therapy was well tolerated until a month after its conclusion when exertional dyspnœa was evident. When he was seen again after another four weeks the dyspnœa was much more severe and he had a dry cough.

On readmission to hospital five days later there were no abnormal physical signs in the chest but expansion was limited to two inches and he had the " door-stop " obstruction on attempting to take a full breath, which is so characteristic of radiation fibrosis. The radiograph showed shadows radiating out from both hila (fig. 2). Resting ventilation was 21·5–31 litres per minute, and vital capacity was 790 ml. (inspiratory capacity 560 ml., expiratory reserve volume 230 ml.). Maximum breathing capacity was 39 litres per minute at the normal optimum rate of 70 breaths per minute (Bernstein et al. 1952) but it increased to 52·5 litres per minute when the respiratory rate was increased to 98 breaths per minute, thus providing further evidence of the inability to inspire fully. The skin on the front and back of his chest showed slight post-radiation changes.

No lymph-glands were palpable, the spleen and liver could not be felt, and the blood-count was normal.

He was treated with oxygen and corticotrophin ('Acthar Gel') 60 mg. intramuscularly twice daily. Dyspnœa increased alarmingly and cyanosis developed, Cortisone was substituted

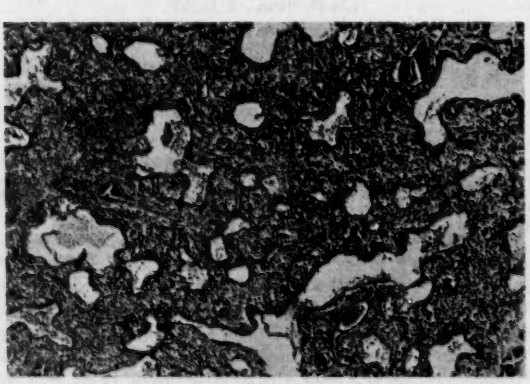

Fig. 5—Low-power view showing dilated alveoli and alveolar ducts lined by hyaline membrane. Many of the surrounding alveoli are collapsed and the remainder contain large numbers of macrophages. (Hæmatoxylin and eosin. × 34.)

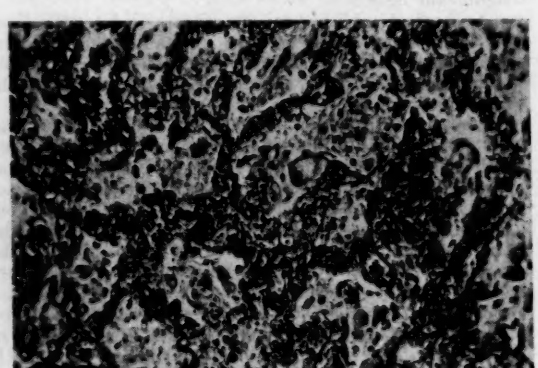

Fig. 6—Thickening and fragmentation of the elastic tissue of alveolar walls. Many lipoid-containing macrophages and a few larger cells are present in the lumen. (Lawson's modification of the Weigert-Sheridan elastic stain. × 148.)

for the corticotrophin in a dose of 300 mg. daily but deterioration continued and he died seventy-two hours after admission.

NECROPSY

Approximately one litre of straw-coloured fluid was present in each pleural sac. The lungs were firm and rubbery and on the lateral aspect were irregular depressed scars (fig. 3).

The lungs were fixed by pouring 4% formaldehyde saline down the trachea and immersing them in the same solution. Section ten days later showed areas of partial collapse and scattered foci of emphysema. At the scarred areas the pleura was thickened and the underlying lung was fibrotic.

The lymph-glands in the neck, mediastinum, and axilla were densely fibrosed but surviving areas of white Hodgkin tissue were evident to the naked eye. No other abnormalities were noted.

HISTOLOGICAL FINDINGS

The cervical, hilar, and para-aortic lymph-glands showed Hodgkin's disease undergoing fibrosis. The spleen, bone-marrow, liver, kidneys, and heart muscle showed no special features.

The lung changes were distributed unevenly throughout all lobes. The dominant change was the reduction in total alveolar space associated with thickening and fibrosis of the alveolar walls, thickening of capillary walls, swelling of the alveolar lining cells (some of which were aberrant and multinucleate), and the presence within alveoli of numerous large macrophages (some of which contained lipoid material) and organising exudate. Some sections showed infiltration of the alveolar walls with lymphocytes and occasional polymorphs (fig. 4). Within the alveoli and alveolar ducts hyaline membrane had formed. For the most part it was closely applied to the alveolar wall but in places it appeared to fill the lumen, and often a dilated alveolus or alveolar duct containing hyaline membrane was surrounded by a zone of collapsed alveoli (fig. 5). Pulmonary œdema of patchy distribution was present, often affecting single alveoli or small groups of alveoli.

There was an increase in the amount of fibrous tissue in the interlobular septa and around large vessels and bronchi. A few large veins showed fibrosis of the muscle coat. The elastica of the alveolar walls showed much thickening and fragmentation (fig. 6). Pleural thickening was evident only at the scarred areas on the lateral lobes. There was no evidence of involvement of the lungs by Hodgkin's disease.

Comment

These findings are in full accord with those published by other workers. It is important that clinicians should be aware that pneumonitis of this kind may follow radiotherapy in which the customary dosage is not exceeded.

We are indebted to Mr. T. F. Dee for the reproduction of the figures.

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"Will the babies who gained 16 oz. a week . . . and the ones on the demand feeding becoming fashionable to-day all be generous and co-operative or will some be feckless and fail to store for a rainy day? Will the underfed babies be stingy and aggressive or competitive and conscientious adults? There seems a good deal more to find out about infant feeding . . . meanwhile we may try to save babies from the pain of crying with hunger without being sure whether we carry the main responsibility for their later behaviour."—RONALD MAC KEITH in Recent Advances in Pædiatrics, edited by Douglas Gairdner. London, 1954; p. 147.

PULMONARY MANIFESTATIONS OF "RHEUMATOID DISEASE"

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With illustrations on plate

THE term "rheumatoid disease" has been suggested as preferable to "rheumatoid arthritis" (Ellman 1947) since it directs attention to "the extensive nature of the condition, with less emphasis on the locomotor system" (Schlesinger 1949). The modern concept of the acute and chronic rheumatisms as allergic diseases with visceral and other lesions due to hypersensitivity further supports the use of the less restrictive term "rheumatoid disease."

Among the non-articular manifestations of this disease pulmonary lesions have been described. Ellman (1947) was the first to report a patient who had a pulmonary lesion as a manifestation of "rheumatoid disease." Later Ellman and Ball (1948) reported three cases in adults in which the "rheumatoid lung lesions" were associated with the early active phase of the joint lesions; and Christie (1954) has reported a case similarly related to the onset of joint symptoms. Hart (1948), Ellman and Cudkowicz (1954), and Christie (1954) have each reported one case in an adult in which the lung lesion appeared during relapse in the arthritic process. Bloom and Rubin (1950) described an adult patient in whom the lung changes preceded the arthritic manifestations. Christie (1954), however, reported a case in which the lung changes were unrelated either to the early activity or to relapse of the joint process. Stolte (1952), in reviewing sixty-eight cases of various pulmonary lesions together with "rheumatoid disease," mentioned seven with "transient pulmonary manifestations of the type described by Ellman and Ball." Leys and Swift (1949) described a pulmonary lesion in a patient with the juvenile form of "rheumatoid disease" (Still's disease); and Schlesinger (1949), reviewing the features of this form of the disease, mentioned two cases with "pneumonitis."

So far twenty cases of pulmonary lesions associated with "rheumatoid disease" have been recorded. A further case is described here.

Case-record

A 46-year-old night-watchman, who had previously worked as a boiler-cleaner for six years, was admitted to Plaistow Hospital chest unit under the care of Dr. Philip Ellman on Aug. 12, 1953, with a history of a febrile illness for the past two weeks, accompanied by shortness of breath and a productive cough. He had had "rheumatoid disease" since 1939, and attacks of bronchitis each winter since 1948; and since 1951 he had lost $1^1/_2$ stone in weight. In 1944 arthrodesis of the left knee was carried out for "tuberculosis," although he had then had the typical rheumatoid type of arthritis for at least four years. Fluid from the joint and material removed at operation revealed no evidence of tuberculosis.

On admission the patient was dyspnœic and slightly cyanotic, and had a temperature of 101·4°F (38·6°C). His respiratory rate was 26 per minute; his chest was barrel-shaped with poor expansion, the percussion note was hyperresonant in all areas, and crepitations were heard over the right infrascapular area. His hands showed the typical deformities of the rheumatoid type of arthritis; there was no clubbing of the fingers. A subcutaneous necrobiotic nodule 1 in. in diameter was present over the right olecranon; the left elbow was acutely inflamed; the left knee was arthrodesed in slight flexion; and crepitus was present in the right wrist, right knee, and both ankles. Small lymph-nodes were palpable in both axillæ, both epitrochlear fossæ, and both inguinal regions.

Investigations

Sputum was bacteriologically examined several times in August, September, and October, 1953. On each occasion a mixed flora of normal commensals was grown; no tubercle bacilli were seen.

The *erythrocyte-sedimentation rate* (Westergren) was 30 mm. in one hour on admission, and 8 mm. one month later and two months later.

Blood.—August, 1953: Hb 92%, white cells 20,500 per c.mm. (polymorphs 89%, lymphocytes 9%, monocytes 2%). September, 1953: Hb 97%, white cells 14,100 per c.mm. (polymorphs 49%, lymphocytes 47%, monocytes 3%, eosinophils 1%). October, 1953: Hb 101%, white cells 10,900 per c.mm. (polymorphs 53%, lymphocytes 43%, monocytes 3%, eosinophils 1%).

Serum-proteins.—October, 1953, albumin 4·3 g. per 100 ml., globulin 2·4 g. per 100 ml. November, 1953: albumin 4·2 g. per 100 ml., globulin 2·8 g. per 100 ml.

Blood-urea 33 mg. per 100 ml.

Wassermann reaction negative.

Synovial fluid from the inflamed elbow revealed no tubercle bacilli or other organisms either on direct examination or on culture.

Barium swallow showed no evidence of achalasia or of œsophageal reflux.

Liver biopsy (Dr. Sherlock) showed normal histology.

Serology.—Cold agglutinins were not present. Complement-fixation tests for the viruses of psittacosis, Q fever, and influenza A and B all showed titres of less than 1/8; and the agglutination test with streptococcus M.G. showed a titre of 1/20 only.

Radiography.—Examination of chest on admission showed dense non-homogeneous shadows in the midzones of both lung fields (fig. 1); three months later there remained only faint reticular shadows (fig. 2). Examination of the affected joints revealed the typical changes of the rheumatoid type of arthritis.

Bronchography showed no evidence of bronchiectasis.

Discussion

The striking features of this case are the onset of the lung condition simultaneously with an exacerbation of the joint process, and the synchronous subsidence of both lesions.

The symptoms of cough, dyspnœa, and loss of weight were originally ascribed to possible pulmonary tuberculosis, but this was not confirmed clinically or bacteriologically. Virus pneumonia is excluded by the polymorph leucocytosis and the negative serology in late convalescence. Bronchiectasis with surrounding inflammation was also suggested by the pulmonary symptoms; this is excluded by the normal bronchograms.

The radiographic appearance of the lungs suggested sarcoidosis, eosinophilic infiltration, or "dysphagia pneumonitis." These are excluded in turn by the normal liver biopsy and serum-proteins, the absence of eosinophilia, and the normal barium swallow. Taken alone the radiographic appearance was also consistent with cardiac failure, leukæmia, "the reticuloses," syphilis, polyarteritis nodosa, or carcinoma of lung; but there is no clinical or pathological evidence to suggest any of these. In association with the occupational history of boiler-cleaning the radiographic appearance suggested a pneumoconiosis: but this is unlikely because the lesion regressed.

"Rheumatic pneumonia" occurring in *acute* rheumatism has been recognised for more than sixty years (Cheadle 1888), and the histological lung changes in such cases have been described by Gouley (1938) and by Neubuerger et al. (1944). The earliest change is a fibrinoid necrosis in collagen, which is followed by round-cell infiltration, and finally by fibroblastic proliferation and fibrosis.

Experimentally Rich and Gregory (1943, 1946) have produced, in animals rendered hypersensitive to foreign protein, a "pneumonitis" essentially similar to that in acute rheumatism.

Similar lesions in "rheumatoid disease" have been recognised only in recent years, and only five reported cases have come to necropsy. In their two cases Ellman and Ball (1948) described findings fundamentally similar to those mentioned above—i.e., fibroblastic thickening of interalveolar septa with round-cell infiltration.

Christie (1954) reported the necropsy findings in three cases, the most remarkable of which had a lesion 7 cm. in diameter in the upper lobe of one lung. Microscopically its structure was "indistinguishable from the subcutaneous periarticular nodule of rheumatoid arthritis." In all three cases there was evidence of the disseminated nature of the disease with similar lesions in many viscera. Christie concluded that "the pathological changes in the lungs . . . were qualitatively similar to the typical rheumatoid nodule but varied widely in severity and extent."

On the basis of its clinical behaviour and the similarity to the other reported cases, I suggest that the lung lesion of the present case was a pulmonary manifestation of "rheumatoid disease."

Summary

The term "rheumatoid disease" is defined.

A further case is reported in which "rheumatoid lung disease" appeared simultaneously with a relapse in the joint condition and resolved pari passu with the subsidence of the acute arthritic process.

I am indebted to Dr. Sheila Sherlock for the report on the liver biopsy, and to Dr. Philip Ellman for permission to publish this case and for advice and encouragement in the preparation of this paper.

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Preliminary Communication

CHROMOSOMAL SEX IN TURNER'S SYNDROME WITH COARCTATION OF THE AORTA

Turner's syndrome of sexual infantilism and dwarfism, webbed neck, and cubitus valgus is found almost exclusively in females.[1] It is strange that this should be so. Furthermore it is paradoxical that an affection occurring in females should often be associated with coarctation of the aorta, which, as an isolated defect, is much commoner in males. These reasons led one of us to wonder whether there is adequate proof that patients with Turner's syndrome are in fact females. Undoubtedly the genitalia are feminine, but the remnants of the gonads cannot be definitely identified as ovaries. Experimental work on rabbit[2] and mouse[3] embryos, the clinical implication of which was fully recognised by Lawson Wilkins,[4] suggests that destruction of the gonads before sexual differentiation has taken place produces fœtuses with feminine genital tracts, whatever the original genetic sex of the castrated embryos. It seemed theoretically possible that at least some of the patients with Turner's syndrome are genetic males who, because their gonads have been damaged or have not developed in early intra-uterine life, have not acquired a masculine genital tract.

The diagnosis of Turner's syndrome, though often made tentatively in childhood, is usually confirmed after puberty when the patients remain small, without mammary development, and without menarche. The pituitary is not primarily involved and follicle-stimulating hormone is excreted in excess; pubic and axillary hair is frequently

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RESULTS OF SEXING OF SKIN IN CASES OF TURNER'S SYNDROME WITH COARCTATION OF THE AORTA

Patient	Age	Sex	Spontaneous menarche	F.S.H. titre M.U./24 hr.	17-K.S. mg./24 hr.	Skin sex
1	20	Female	Nil	96 +	3·5	Male
2	18	Female	Nil	96 +	6·4	Male
3*	10	Female	Prepubertal	8 −	4·8	Male

* Absolute proof of ovarian agenesis is not at hand because of patient's age and because exploratory laparotomy was not done.
F.S.H. = follicle-stimulating hormone.
17-K.S. = 17-ketosteroids.

present, though scanty; the urinary output of 17-ketosteroids is somewhat reduced.[5 6]

The sex of an animal is said to be reliably ascertainable by examining the nuclei of the cells of its nervous system [7]; and the fact that skin lends itself equally well to sexing [8–10] has made this method generally practicable.

Our observations were made on three patients who have coarctation of the aorta as well as with Turner's syndrome. Portions of skin were taken (by P. E. P.) from the axilla and fixed and stained according to the recommendations of Hunter, Lennox, and Pearson.[10] The sections were then examined by B. L. and W. F. H., who gave their opinion on chromosomal sex without knowing either the apparent sex of the patient or the nature of the investigation.

The findings set out in the table show that at least some patients with Turner's syndrome and coarctation of the aorta have a chromosomal pattern which is characteristically seen in males. In the three cases studied the discrepancy found between apparent sex and the results of skin biopsy suggests that something went wrong in their sexual differentiation. Though some believe that differentiation of the genital tract is genetically determined [11] during embryonic life, it is generally attributed to the activity of hormones.[12] The findings in our three patients are those one would expect if the testicles failed to develop fully or were destroyed in early intra-uterine life, and if feminine sexual differentiation then took place as in the castrated animal embryos of Jost [2] and of Raynaud and Frilley.[3]

We are now investigating cases of Turner's syndrome without coarctation of the aorta, cases of pure ovarian agenesis, and cases with isolated coarctation of the aorta.

Thanks are due to Dr. R. Mac Keith for bringing chromosomal sexing to the notice of one of us (P. E. P.), to Dr. J. Baylis for help, and to Dr. Peter M. F. Bishop and Dr. Maurice Campbell for putting their cases at our disposal.

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Medical Societies

AMERICAN RHEUMATISM ASSOCIATION

THE meeting of the American Rheumatism Association, held in San Francisco on June 18 and 19, reflected growing interest in the rôle of endocrinology in the arthritic diseases.

Treatment of Rheumatoid Arthritis

W. K. SOLOMONS (Cleveland) reported on the results of a questionary sent to the 801 members of the association, who were asked to report the types of treatment they were using for their patients. 284 practising physicians replied, giving details of over 13,000 patients. Salicylates were still the sheet-anchor of treatment, being the drug of choice with 80% of the doctors. About 18% of the patients were receiving oral cortisone, and 21% were being treated with hydrocortisone, mostly by intra-articular injection. 28% of patients were receiving gold therapy, and 18% phenylbutazone. It was clear that ideas on the indications for these drugs and hormones varied considerably, and were often contradictory.

Large-scale clinical studies have also produced contradictory impressions. H. F. WEST (Sheffield) reported the results of a Medical Research Council therapeutic trial of cortisone compared with aspirin in early cases of rheumatoid arthritis. Initially the cortisone cases fared better, but after a year there was no difference between the two groups. The same conclusion was reached in an Empire Rheumatism Council study of the treatment of more advanced cases of rheumatoid arthritis. An American Rheumatism Association study of current cortisone therapy—admittedly not a statistically controlled trial—produced an impression more favourable to cortisone. Of about 300 patients followed for three years or more, 77 were able to stop cortisone therapy because of remissions in their disease.

J. J. BUNIM (Bethesda) had studied a large series of patients with rheumatoid arthritis receiving cortisone therapy for up to four years. He found considerable improvement, mainly in the activities the patients were able to undertake. He contrasted his four-year follow-up results with those (as yet unpublished) which had been achieved without cortisone by Dr. E. Dresner and Dr. E. G. L. Bywaters at the Postgraduate Medical School of London. The patients on cortisone fared much better than those without it. Whether this difference between the two treatments accounted for the difference in the results was difficult to say, because the two groups also differed in many other ways, such as selection of the patients, the way in which they were graded, and rehabilitation measures.

L. W. KINSELL (Oakland) emphasised the need for giving low-salt, high-protein diets with added potassium chloride in conjunction with cortisone therapy.

E. CALKINS (Boston) had accumulated interesting metabolic balance data on several patients receiving cortisone for up to four years, who had been carefully studied at times of crisis, such as intercurrent surgical operations, sudden increase or cessation of cortisone therapy, or the administration of corticotrophin. The well-known initial effects of cortisone on the nitrogen and calcium balances were not maintained over the years of prolonged administration. 2 patients in whom it was studied showed a striking sodium retention starting on the fourth day after their cortisone therapy was suddenly withdrawn; this was partly accounted for by expansion of the plasma and extracellular fluid volumes.

I. DUFF (Ann Arbor) reported on 1020 intra-articular injections of hydrocortisone acetate in 60 patients. In 50% of the joints injected a worth-while and maintained improvement occurred.

J. L. HOLLANDER (Philadelphia) found that the less soluble ester hydrocortisone-t-butyl-acetate was up to ten times more effective than hydrocortisone acetate when given intra-articularly. Several speakers had used the synthetic 9-halogen (Cl–, F–) derivatives of hydrocortisone and had found that these were clinically more effective than the parent substance, but since they were

also more toxic there was at present no advantage to be gained from using them.

Physiology of Adrenocortical Hormones

T. F. DOUGHERTY (Salt Lake City) emphasised that probably only connective tissue could show the inflammatory response. He had evolved a preparation in which the inflammatory reaction of connective tissue could be quantitatively measured.

A small sheet of areolar tissue from the flank of a mouse was stretched on a slide, stained, and subjected to total and differential cell counts as in a blood-smear. The results of a standard inflammatory stimulus previously injected into the tissue could be measured in terms of the number of polymorph cells which migrated into the test strip of tissue, and also by the number of fibroblasts which showed degenerative changes.

This inflammatory reaction could be inhibited by adrenal cortical hormones, but the dose of hormone required for this varied with the size of the inflammatory stimulus. As measured by inflammation-inhibiting action, it required about 2500 parts of corticosterone or 78 parts of cortisone to equal the effect of 1 part of hydrocortisone. Viewed under the phase-contrast microscope, the first effect of hydrocortisone was to cause the fibroblast to withdraw its pseudopodial processes, and to become spherical and granular. In this state it seemed to be immune from the necrosing action of the inflammation-producing stimulus. When C^{14}-labelled hydrocortisone was used it concentrated in the fibroblasts, and was presumably responsible for their granular appearance. Some of these connective-tissue films were spread on copper grids and viewed under the electron microscope after uranium shadowing, when the interfibrillar ground-substance presented a well-defined and regular granularity. This apparent structure was lost when the tissue had been pretreated with hyaluronidase, or when the animal had been adrenalectomised, or following injections of deoxycortone.

D. J. INGLE (Chicago) also emphasised that the effect of a dose of adrenal cortical hormones was related to the need for it. A rat in prolonged work tests needed a larger amount of the hormones to keep it metabolically normal than could be tolerated by a resting rat without signs of hypercorticism. Nor was it true that the increased nitrogen katabolism after a major operation resulted from the increased production of cortical hormones owing to the stress of surgery; for this katabolic response was still shown by adrenalectomised animals maintained on a constant dose of cortisone. The normal action of cortical hormones in the body appeared in many instances to be "permissive." Many homœostatic mechanisms of the body depended on the presence of cortical hormones, but were not the direct effect of the increased secretion of these hormones.

R. E. PETERSON and his associates at Bethesda had studied the rate of disappearance of hydrocortisone from the blood-stream. They found that half of an intravenously injected dose disappeared from the circulation in about 2 hours. Disappearance was slower in the presence of liver disease, normal in rheumatoid arthritis, and quicker in hyperthyroidism. Cortisone left the circulation more rapidly than hydrocortisone. When tracer-labelled hormones were given to guineapigs, the majority of the injected radioactivity was secreted by the bile and reabsorbed by the gut. Eventually about 80% of the original radioactivity was found in the urine and 20% in the fæces.

Dr. WILSON (New York) reported more evidence of the local tissue metabolism of hydrocortisone. If this hormone were injected into a rheumatoid knee effusion it was rapidly changed to several other steroid derivatives (none of which were present in significant amounts in control fluid from the opposite knee). In another similarly designed experiment she had shown that cortisone was changed to hydrocortisone at tissue level. There was also evidence of patient-to-patient variation in the tissue metabolism of these hormones.

M. E. SIMSPON (San Francisco) read an interesting paper on the nature of the arthropathy induced in rats by injections of growth-hormone. Only the knees, ankles, and vertebral column showed changes, which were symmetrical and similar to those described by Rheinhart and Li (*Science*, **1953**, **117**, 295) for growth-hormone-treated adrenalectomised rats. Hypophysectomy increased the incidence and severity of these lesions. Knees and ankles showed thickened joint linings, irregular and sometimes eroded articular cartilage, and irregular juxta-articular bony outgrowths and calcifications. The commonest change in the spine was excessive bone growth on the ventral parts of the vertebræ.

Another aspect of the physiology of growth-hormone was discussed by C. W. DENKO (Chicago). Rats given radioactive S^{35} sulphate incorporate it fairly rapidly into their cartilages—presumably as chondroitin sulphate. Growth-hormone increased this rate of sulphur uptake fourfold in hypophysectomised animals, especially in rib cartilages. Surprisingly, growth-hormone decreased the sulphur uptake of cartilages of normal animals.

Observations on Rheumatoid Arthritis

C. L. SHORT (Boston) had followed up for fifteen or more years 293 consecutive inpatients with rheumatoid arthritis. Before admission to hospital the disease had been essentially progressive in 73%; but in the remainder there had been one or more complete subjective remissions. Remissions were either brief or long, but in the majority of the remitting cases exacerbations were brief. Once an attack had lasted more than a year subsequent remission was unlikely; nevertheless an occasional complete remission occurred after two to five years of active disease. The incidence of relapse or initiation of the disease showed a striking increase in the colder months, particularly March. Other reported series confirmed this tendency and showed that rheumatoid arthritis must be regarded as a seasonal disease.

S. COBB, an epidemiologist from Pittsburg, who is conducting surveys of the incidence of arthritis, had noted that in routine case-finding for this disease there were at least 8 patients with atypical or *forme fruste* arthritis for every 1 who had the typical syndrome. Similarly, if the clinical criteria for the diagnosis of rheumatoid arthritis and degenerative joint disease were tabulated, it was found that for each with the typical syndromes of these diseases there were several with intermediate gradations between the two.

Several speakers reported work on the anæmia of rheumatoid arthritis. E. J. FRIEREICH (Boston) had found that the iron uptake and turnover of red cells, the rate of red-cell production, and the rate of red-cell destruction were essentially normal in this disease. In 6 out of 12 patients a decreased red-cell survival was found (using the Ashby technique). By cross-transfusion experiments with normals it had been shown that in rheumatoid arthritis the individual red cells were normal, but in the arthritic they met some non-humoral factor in their passage through the blood-stream which decreased their survival.

J. J. BUNIM had also measured red-cell survival in this disease, but he had used the technique of radioactive red-cell tagging (by sodium chromate, Cr^{51}). For the individual patient, the ratio of red-cell production to red-cell destruction seemed to decrease with increase in the activity of the disease.

A. S. DIXON (Boston), on the other hand, had sought to find out to what extent the apparent anæmia was due to reduction in total red-cell mass and to what extent it was due to increase in plasma-volume. These two components of the total blood-volume had been measured

simultaneously in 10 typical rheumatoid arthritics and in 10 normal persons matched for age and sex. The majority of the anæmia was in fact due to increased plasma-volume.

T. H. POTTER (Boston) drew attention to the high incidence (over 90%) of neck involvement in rheumatoid arthritis of childhood. This condition might progress very rapidly to cervical bony ankylosis. Residual cervical ankylosis was an important sign in adults of childhood arthritis, and was sometimes the only sign. Such fusion of cervical vertebræ was sometimes wrongly ascribed by radiologists unacquainted with this picture to a congenital lesion.

Gout

J. B. ROBERTS (Toronto) advocated administration of intravenous colchicine in 3-mg. doses as a safe and sure way of aborting the pain of gout, and as an efficient diagnostic test for this disease. Other speakers confirmed the efficacy and safety of intravenous injection. Intramuscular phenylbutazone could also produce rapid relief.

A. B. GUTMAN (New York) had compared the uricosuric action of probenicid, phenylbutazone, and salicylates. Whereas probenicid was effective in a dosage of 1 g. per day, the other two were not uricosuric unless plasma levels of more than 10 mg. per 100 ml. were attained; indeed salicylates in low dosage tended to cause urate retention.

Rheumatic Fever

L. A. RANTZ (San Francisco) spoke of the great difference between the responses of infants and of older children to group-A β-hæmolytic streptococcal infections. Up to 4 years of age this infection was commonplace; but it was characterised by lack of acute onset, low-grade or absent fever, rhinorrhœa, a protracted course, frequent complications such as otitis media, and poor antibody production. With increasing age the pattern of response changed to that of an acute febrile illness, with exudative tonsillitis, skin rash, vigorous antibody response, and non-suppurative complications such as rheumatic fever.

G. H. STOLLERMAN (New York) reported on a useful advance in the chemoprophylaxis of rheumatic fever. He had given monthly intramuscular injections of 1,200,000 units of benzathine penicillin ('Bicillin'). In children convalescent from rheumatic fever so treated, representing 2893 outpatient months and 1960 inpatient months, no recurrences of rheumatic fever had been seen, and routine throat swabs had been positive for streptococci on only three occasions. In a year's follow-up only 3 out of 145 outpatients showed progression of their heart lesions under this prophylaxis. The incidence of allergic drug complications was no greater than with ordinary penicillin therapy, and only 1 patient had permanently to discontinue this treatment because of them. 2 patients developed infective endocarditis, and 1 staphylococcal otitis media; but all were promptly controlled by other antibiotics.

V. C. KELLEY (Salt Lake City) had measured the amounts of circulating 17-hydroxycorticosteroids and of circulating corticotrophin in normal people and in patients with rheumatic fever. In chronic rheumatic fever and in chorea, circulating corticotrophin was increased while circulating 17-hydroxycorticosteroids were decreased, giving a pattern of relative adrenal insufficiency which could, nevertheless, respond normally to exogenous corticotrophin. He fitted his steroid therapy to the pattern of hormonal response shown by the patient, and claimed to have almost entirely averted residual heart lesions in the early cases of the disease in his series.

Fundamental Research

J. R. MARTIN and his associates at Columbia (New York) had evolved a technique for the experimental study of the factors affecting the production of the granulation tissue of wound healing.

A piece of cotton gauze, kept sterile with penicillin, was inserted under the skin of a rat. Within a few days it would be surrounded by granulation tissue. If cortisone were given simultaneously the granulation-tissue response was almost completely eliminated. This is well known, but a new discovery was that if suspensions of powdered cartilage were given by local injection at the same time as the cortisone, then the granulation-tissue response was restored.

It seemed that some heat-stable substance was present in cartilage which was a direct antagonist to cortisone. All preparations of cartilage were active in this manner, but autoclaved cartilage was the most effective.

ERNEST FLETCHER (London) advocated the use of the Scott-Blair viscometer for measuring the viscosity of synovial fluid. This instrument overcame the objection to most of the others in use—namely, that the relative viscosity of a hyaluronate solution varies with the stress of the force causing it to flow.

B. BLUMBERG (New York) reported observations indicating that the hyaluronic-acid molecule was a particle of molecular weight about 8 million whose envelope was a sphere of diameter 2000A° (the linear polysaccharide being coiled in some way within this sphere). It was accompanied by a large (99·75%) amount of water which circulated fairly freely within the meshes of the finer molecular structure.

LEWIS THOMAS (Minneapolis) drew attention to the close similarity of the appearance of the eosinophilic material which blocks the glomerular capillaries in renal lupus, to that which blocks them in renal cortical necrosis of the experimental generalised Schwartzman reaction in rabbits. He believed that this fibrinoid material was an altered form of fibrinogen. Heparin, which inhibits the generalised Schwartzman reaction, also inhibited the precipitation of this fibrinoid material in the kidney. A synthetic polymer, sodium polyanethol sulphonate, which had the property of precipitating fibrinogen from plasma, when injected along with the endotoxin of the Schwartzman reaction, enhanced its action a thousandfold. He believed that the two stages of this reaction involved the appearance in the blood of an abnormal coagulable material derived from fibrinogen, and its subsequent precipitation in physiologically dangerous sites.

Reviews of Books

Röntgen Diagnostics

H. R. SCHINZ, W. E. BAENSCH, E. FRIEDL, and E. UEHLINGER. Translated by J. T. CASE, M.D., professor of radiology emeritus, Northwestern University Medical School, Chicago. Vol. II. *The Skeleton.* London: Heinemann Medical Books. 1952. Pp. 2059. £15. Vol. III. *The Thorax.* London: Heinemann Medical Books. 1953. Pp. 3115. £15.

Professor Case undertook the arduous translation of this encyclopædic work, not because he was impressed by its size but because he believed that it was the most important reference work on radiology in any language. Few will disagree with this opinion. Vol. I, already reviewed, dealt with radiation physics, normal bone and its anatomical and congenital variations, and fractures and inflammatory diseases of bone.

Vol. II begins with tumours of bone and metastatic diseases of bone. The spine is considered separately. After this come injuries and diseases of joints, then neuroradiology and the nasal sinuses, and finally short sections on soft-tissue radiology and teeth. In every section emphasis is laid on the clinical and pathological aspects—at times (as in synovioma) even at the expense of the radiology. This is generally a virtue and not a fault. The section on bone tumours is rather brief (only 100 pages) but with clarity and economy of words nothing has been omitted, and it is hard to believe that this section is a translation. The Swedish school have written the sections on neuroradiology, angiography, and the accessory sinuses. These are all superb. It is, however, impossible to find fault with any section in this volume.

Vol. III is on the same monumental scale. The literature up to about 1947 or 1948 has been thoroughly combed and every conceivable rarity gets a mention somewhere. Fischer's section on pulmonary anatomy is exceptionally good. Surprisingly enough, the section on tumours of the lung is weak. For example, emphasis is laid on the development of carcinoma in relation to pulmonary scars, and this is described as a distinct type of lung carcinoma, while the much commoner X-ray appearances get comparatively little attention. The section on the heart has been written by a cardiologist and not by a radiologist. In the section on congenital disease, he has, like most other writers, been overtaken by the tempo of research. Nevertheless it is a valuable contribution, although many of the finer radiological points such as the changes in the pulmonary vessels, receive scant attention.

This English translation is of the 5th German edition, rewritten in the four years after the war. There is in the original a dearth of English and American references. Most of these have been inserted by Dr. Case, and the bibliography is now excellent. The illustrations throughout are of the finest quality. Despite their price, these volumes are worth it and should be in every X-ray department.

The Biochemistry of Genetics

J. B. S. HALDANE, F.R.S., professor of biometry at University College, London. London: Allen & Unwin. 1954. Pp. 144. 15*s*.

Professor Haldane has a well-deserved reputation for the exposition of difficult topics. Here his intention is to guide biochemists through the work that has been done on the genetical biochemistry of a great variety of organisms. He shows how the analysis of genetic variants has greatly helped towards an understanding of stages of biochemical synthesis which it would have been hard to reach in more conventional ways. Some of this work is not easily interpreted in terms of classical genetics and his treatment of these difficulties is interesting.

For example, some organisms—unfortunately mostly those which have not been fully studied genetically—show a capacity to learn to use unfamiliar substrates. Where the new faculty is gradually lost if the stimulus is removed, there is perhaps little difficulty; the originally induced substance is being gradually diluted during cell growth and division. Where, however, the "training" appears to be long-lasting in the absence of the original stimulus, there is a real difficulty. Haldane suggests that in these instances "the metabolic processes concerned have been switched into a new path, and this is a self-conserving dynamical pattern." Alternatively, the induced substance may have a capacity for self-replacement like the genes themselves. But these can be little more than speculations until more is known of the links between the biochemical structure of the genes and their end effects.

This book will add to Haldane's reputation as a teacher, and the ordinary doctor who likes to think about fundamentals will enjoy it as much as the biochemist, though both may be irritated by its occasional political asides.

Pomp and Pestilence

Infectious Disease, its Origins and Conquest. RONALD HARE, M.D., professor of bacteriology at St. Thomas's Hospital, University of London. London: Gollancz. 1954. Pp. 224. 12*s*. 6*d*.

Professor Hare's vivid and absorbing story of the origins, rise, and fall of communicable diseases, and their effects upon the lives and destinies of populations large and small, is intended primarily for the layman. But doctors will read with pleasure and profit what is in fact a short but comprehensive history of epidemiology and demography through the ages set against a background of modern bacteriology, virology, and sociology.

Professor Hare discusses, in turn, parasites and parasite-host reactions; the establishment of endemic diseases from the Neolithic period onwards; and the mechanisms of epidemics of major diseases. In succeeding chapters he gives readable accounts of ancient and modern medical philosophies and of the emergence and successes of preventive medicine, aseptic surgery, and antibiotics. But he ends on a Malthusian note: he fears that, in the teeming East at any rate, children in future may be protected from infection only to die from starvation.

It is a pity that Professor Hare should revive the highly dubious doctrine of the aerial convection of smallpox over long distances; in attributing the introduction of toxoid to Ramon he ignores the fact that A. T. Glenny discovered it long before Ramon independently produced *anatoxine*; and some readers will think that in the next edition he should discard anthropomorphism ("dysentery loves the soldier"). But this is an admirable book.

Cancer of the Lung

Editor: Dr. JOHANNES CLEMMESEN, chief pathologist, director, cancer register, Copenhagen. Paris: World Health Organisation. 1953. Pp. 210. 42*s*.

THE Council for International Organisations of Medical Sciences convened an international panel on cancer of the lung at Louvain in 1952. The proceedings of this symposium were reported in full in *Acta Unionis Internationalis contra Cancrum* and are reprinted in this W.H.O. publication.

Experts in every branch contributed reports on the geographical distribution of lung-cancer mortality, on occupation and smoking as factors in carcinogenesis, and on pathology and animal experimentation. Useful as these reviews are, their value is enhanced by the recorded comment of those taking part in the symposium. Their deliberations resulted in recommendations for the future pattern and methods for epidemiological research on this subject. The progressive increase in the number of cases and deaths is (the participants believe) real, and the association between smoking and lung cancer indicates cause and effect. Atmospheric pollution and specific occupational hazards certainly seem to play a part, but they cannot fully explain the sex and geographical distribution and time trends of cancer mortality. More research is required, however, on the relative importance of these separate factors and on the manner of their co-action. Individual differences in susceptibility to cancer of the lung and the distribution of cases of differing histological types seem to deserve further study.

Handsomely produced and supplied with summaries in German, French, Spanish, and Italian, this book is, despite occasional spelling errors, a very useful introduction for anyone venturing into the contentious field of epidemiological research in cancer.

Cardiography (2nd ed. London: Butterworth. 1954. Pp. 212. 45*s*.).—This second edition of Dr. William Evans's book is expanded mainly by new work of the author and his collaborators. The use of an additional lead—namely III in deep inspiration—is advocated, and CR leads for registering the electrocardiogram from the chest wall. (Dr. Evans gives reasons for this preference over the V chest leads.) There is new matter on the electrical axis, on preponderance, and on cardiac infarction, with a description of minor changes in the ventricular complex in "restricted" infarction. The section on phonocardiography contains new work on the split second sound and the mitral snap, and a fresh classification of triple heart-sounds. The description of murmurs has been modified and amplified. The production of the book is excellent, and the illustrations faultless. Some of the author's views are unorthodox, but that is the way thought is provoked and knowledge advanced. Perhaps not an easy book for the beginner, it remains one of the few original and scholarly works on its subject.

Love, Hate, and Reparation (London: Hogarth Press and Institute of Psycho-analysis. 1953. Pp. 119. 8*s*. 6*d*.).—This is a reprint of two lectures by Melanie Klein and Joan Rivière, published in 1937 among the Psycho-analytical Epitomes edited by the late John Rickman. It dates a little, but in essentials remains as unprovocative an exposition of Mrs. Klein's views as can be found anywhere.

Isotopic Tracers.—The publishers of this book, which was reviewed in our issue of July 3, are the Athlone Press of the University of London, and not the University of London Press Ltd.

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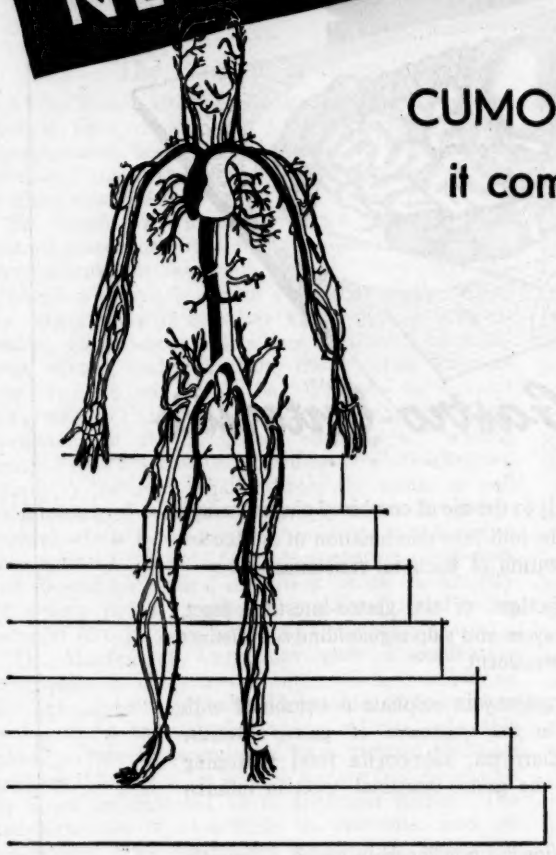

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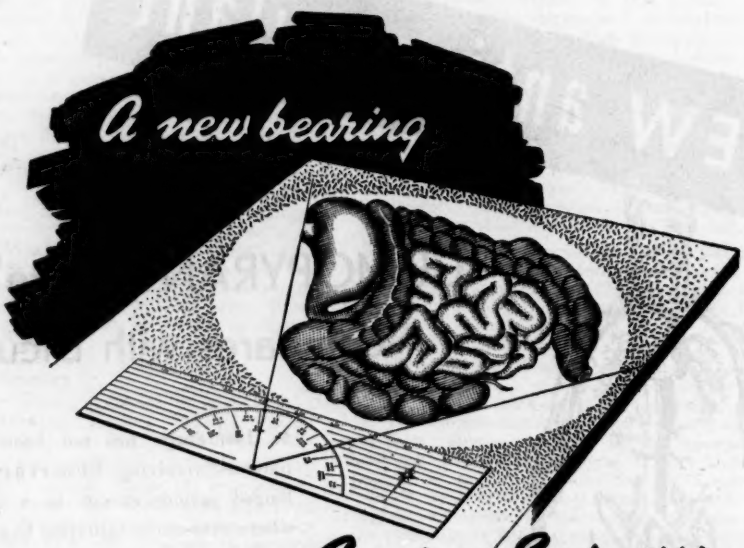

on Gastro-Enteritis

Emphasis has been given recently to the use of combined chemotherapy in infections and the merit of the judicious combination of antibiotics and sulphonamides in the prevention of bacterial resistance.

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THE LANCET

LONDON: SATURDAY, JULY 17, 1954

The Problem of Sleep

AT the British Medical Association's annual meeting, held in Glasgow on July 1–9, discussions by the representative body [1] were followed by the scientific meeting; and at the first plenary session the Problem of Sleep was reviewed.

Sir GEOFFREY JEFFERSON, F.R.S., gave a brief historical account of the many theories of sleep which have themselves been put to rest. Nowadays the problem is approached from a different angle. When the many afferent impulses which obtrude on our waking consciousness have been minimised by darkness, silence, and relaxation, the question becomes not Why do we sleep? but Why do we waken? MAGOUN, of Chicago, has shown that the reticular formation of the brainstem contains a "waking centre" which activates a "diffuse projection arousal system." Afferent impulses from the soma, as well as impulses of cortical origin, act on this brainstem centre, which is constantly "prodding" the cortex into activity. According to this concept sleep does not depend on cortical inhibition, or on the activity of a sleep centre; rather is it a conditioned reflex brought into play by fatigue of the waking centre.

Dr. MACDONALD CRITCHLEY gave a fascinating description of the phase of sleep which is known as the "pre-dormitum"—those agreeable moments when reality fades through fantasy to oblivion. In this phase a normal person may have strange illusions, perhaps thinking of his body as having become smaller or larger or distorted as in a curved mirror. The pre-dormitum is vulnerable in insomnia, and its tranquillity may be marred by sensory, motor, or mental disturbances; the distressing symptoms of a protracted pre-dormitum may be accentuated by physical discomfort, anxiety, fear of insomnia, and especially the barbiturate drugs when these have been taken in a dose that is ineffective either because it was too small or because the person has become habituated to its effects.

The problems of sleep as seen by a general practitioner were ably dealt with by Dr. J. O. MCDONAGH, who remarked on the growing number of patients who consult their doctor because of insomnia. It is all too easy to prescribe hypnotic drugs for such patients, but such requests should be resisted: the doctor often has it in his power to do much more real good for his patient by discovering and helping to remove the underlying cause of insomnia, which often is mental conflict. The study of insomnia, remarked Dr. MCDONAGH, is the study of human nature. In trying to alleviate this symptom attention should be paid not only to drugs but also to the institution of a bedtime routine which will provide physical comfort and mental and spiritual repose. Late-night beverages are often recommended and are widely advertised; but, tea, coffee and alcohol all being unsuitable, Dr. MCDONAGH suggested that nothing can equal a plate of good thick porridge.

Dr. A. H. DOUTHWAITE, who discussed sleep as a general medical problem, also thought that much can be done to prevent and relieve insomnia without recourse to drugs. The sleepless, pill-consuming, high-presure business man who regards his daily presence as indispensable to the efficient conduct of his office must be dealt with ruthlessly. Drugs should be abruptly withdrawn and the patient promptly removed from his home and his business and packed off on a month's holiday. Dr. DOUTHWAITE made a strong plea for a neglected yet simple and highly efficacious soporific—the acquisition of the art of muscular relaxation.

None the less a hypnotic drug often has to be prescribed, and Prof. D. M. DUNLOP gave an authoritative account of the drugs in current use. If he were ever obliged to retire to a desert island Professor DUNLOP would take with him for his personal use: chloral hydrate "laced" with tincture of opium for safe sedation and analgesia in the early painful stage of his pneumonia, paraldehyde for his delirium tremens, phenobarbitone for his anxiety neurosis, quinalbarbitone (a cheap, quick-acting barbiturate) for routine nightly use, and the longer-acting butobarbitone for "the ultimate early-morning wakefulness of old age." Professor DUNLOP considered that there is little place for carbromal and methylpentynol; and he recited the funeral obsequies of the bromides before an audience some of whom seemed to doubt that the patient was yet dead. As single-dose sedatives, Professor DUNLOP reiterated, they are ineffective, and their use is unphysiological and irrational. The same tumbrel carried off to the place of execution the older long acting barbiturates, barbitone and sodium barbitone; and Professor DUNLOP emphatically stated that phenobarbitone should never be used to induce sleep.

The problems of sleep illuminated by this symposium are two: the problem of its mechanism, which modern experimental and electrical physiology has done much to elucidate; and the problem of the management of insomnia, where what is now required is the intelligent application of agreed principles.

1. See *Lancet*, July 10, 1954, p. 81.

Protein Metabolism in the Nephron

SMALL amounts of protein are generally believed to pass through the intact glomerular filter, and it has now been established beyond reasonable doubt that abnormal glomerular permeability is one determinant of proteinuria in the nephrotic syndrome [1]; but it is not yet known whether the tubules, offered a greater filtered load of protein, respond by absorbing more of it or whether defective absorption also contributes to the protein loss. The prospects of early solution of this problem by clinical observation are poor; and, although it is thought that the normal renal tubule must absorb a considerable quantity of protein, little is known of the mechanisms mediating this process or

1. See *Lancet*, July 10, 1954, p. 76.

of the physiological factors influencing it. There have now appeared in the *Journal of Experimental Medicine* five papers by JEAN OLIVER and his collaborators [2–6] in New York that should appeal to physician and physiologist alike; for, starting with descriptions of the morphological changes in proteinuria, they lead to highly credible hypotheses regarding protein and amino-acid metabolism in the nephron. These papers are the definitive account of a long series of researches summarised by OLIVER in his Janeway lecture [7] and elsewhere.[8]

Advantage has been taken of the highly permeable glomerular membrane of the rat, and of the fact that in this species parenterally administered protein appears unchanged in the urine,[9] to study the response of the tubule to an increased load of filtered protein. Using rat-serum and various foreign proteins, the New York workers have observed the selective appearance of injected material within cells of the mid-portion of the proximal convolution, and they claim to be able to distinguish two phases of "protein absorption." Initially, the protein is seen dispersed diffusely through the cytoplasm of the renal epithelium,[2 10] the cytoplasmic architecture of which remains otherwise unaltered. They contend—though they have by no means proved—that this appearance reflects the tubular absorption of protein preparatory to its return in some form to the blood-stream. When the capacity of the tubule to absorb protein is exceeded or (to put the matter more cautiously) when proteinuria is sufficient or long sustained, there ensues gross disorganisation of cytoplasmic pattern. The mitochondrial rods at the base of the affected tubule cells disappear and their place is taken by gram-positive droplets [2 7] corresponding to the "protein" or "hyaline" droplets of the morbid anatomist. By histochemical examination,[3] and by direct biochemical analysis [11] of droplet suspensions obtained by differential centrifugation,[11 12] the droplet has been shown to contain not only the administered protein but also the constituent materials of the mitochondrion released to the cytoplasmic pool on its dissolution. Succinoxidase and cytochrome oxidase, which are normally associated with the mitochondria,[13] are detectable within the droplet.[5] This suggests that the absorbed protein, mingling within the droplet with mitochondrial enzymes, may ultimately be removed by proteolysis. Some such mechanism must doubtless operate since the protein-containing droplets eventually disappear from the renal cells.[2]

The observations have been extended to a study of the effects of amino-acids; and after their parenteral administration it was found that the amino-nitrogen content of the kidney cortex increased [6] and that minute gram-positive droplets appeared in the proximal convolution.[4 7] LEE,[4] using various amino-acids, has shown histochemically that these droplets have a higher content of the administered amino-acid than has the general cytoplasm of the cell. The droplets, although smaller than those produced by protein, appear to represent a similar aggregation of mitochondrial substance and administered material [4]; and some evidence [6] suggests that through this association the amino-acid may become incorporated into cellular protein. There would thus seem to be little doubt that the mitochondria are in some way concerned with protein and amino-acid metabolism in the nephron; but it cannot yet be concluded that the observed relationship indicates that the mitochondria are responsible for the tubular transport of protein or amino-acids.[8] Earlier observations [14] on hæmoglobinuria had demonstrated the concentration of hæmoglobin in mitochondria of the proximal convolution, and its subsequent degradation was signalled by the appearance of hæmosiderin granules in the same situation. Similarly, injected sucrose appears in proximal-tubule mitochondria, as does glucose when the amount filtered at the glomerulus is greatly in excess of normal.[15] Thus the impression gained is that the aggregation of injected material with the mitochondrial apparatus represents a mechanism of disposal rather than of transport. We shall need further evidence before we can conclude that the mitochondria are the organs of tubular transport, though with their peculiar spatial orientation within the cell they seem suited for this function.

Irrespective of their meaning in terms of protein absorption or protein metabolism, the observations of OLIVER and his team are of interest in a different context. They have shown [2] that after the production of droplets by protein administration it may be days or even several weeks before the mitochondrial architecture is restored to normal. This raises many questions in view of the multiple functions now ascribed to the mitochondria. They are the main intracellular locus of oxidative activity and the generators of phosphate-bond energy [16]; and for the latter function their structural integrity seems to be essential.[17] Mitochondrial suspensions prepared from kidney and from liver [18–20] have been found capable of establishing concentration gradients for various ions, including the monovalent cations sodium and potassium.[18 19 21] In the same preparations the water content may vary with metabolic activity,[20] which suggests that the mitochondria may subserve the function of osmotic regulation. In considering the factors regulating the water and electrolyte content of cells, emphasis is shifting from the membrane to the metabolic apparatus of the cell; and KREBS [22] has compared the cell to "a leaky ship kept afloat by pumps." What happens to the ship when important metabolic pumps become clogged with absorbed protein? Can the pumps remain efficient while coping with the unwonted load—or does the ship begin slowly to sink?

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Toxicity of Citrated Blood

MASSIVE transfusion of citrated blood has from time to time been found to have toxic effects,[1–3] but only recently have these been investigated experimentally. COOKSON et al.[4] simulated in dogs the conditions of a cardiac operation by opening the pericardium, after which the animals were bled from the carotid arteries. The blood was mixed with citrate or with heparin and was infused into the carotid artery. Blood-pressure readings were taken after the pericardium was opened but before bleeding, after bleeding, and after infusion. In the 10 dogs which received heparinised blood the subsequent blood-pressure was 97–139% of the first reading; but in the 12 which received citrated blood the figure varied from − 6 to + 112%, and in 8 of the 12 it was − 6 to + 50% only. COOKSON et al. also studied the time taken by carotid transfusions of citrated blood to cause cardiac arrest in hypothermic dogs which had undergone occlusion of the venæ cavæ, and some of which then received citrated blood. 80% of untransfused dogs withstood caval occlusion for twelve minutes before the onset of cardiac arrest; but in 7 of the 10 dogs which received citrated blood cardiac arrest occurred in less than twelve minutes. It is a pity that these experiments were not controlled by noting the time until onset of cardiac arrest after infusion of some other preparation, such as heparinised blood.

The cause of the cardiac depression which seems to be brought about by citrated blood is not yet known; but citrate has been shown to be a cardiac poison.[5] Infusion of relatively large amounts into patients with greatly reduced blood-volumes might induce this toxic action, especially when the cardiac output is greatly reduced or the systolic contractions are weak; for then a substantial part of an arterial transfusion into the arm may pass into the coronary arteries.[6] A second possible factor is the acidity of citrated blood; even when fresh it has a pH of 7·1, and it becomes more acid with storage. Thirdly, citrate removes from the blood and tissues ionised calcium, and, as RINGER [7] showed long ago, without this the heart cannot beat. Lastly, citrated blood is venous blood, which is not completely suitable for arterial transfusion. MELROSE and WILSON [8] drew attention to the hazard of potassium intoxication with arterial transfusion of stored citrated blood. They showed that the potassium content of the plasma of stored blood increases with storage, after twenty days reaching levels of more than 10 m.eq. per litre. Slow intravenous infusion of potassium at such a concentration into patients with a normal blood-volume should be quite safe; but in cardiac surgery, or in such experiments as those described by COOKSON and his colleagues, it might give the coup-de-grâce to a failing heart. Possibly the results described by COOKSON et al. were due to hypercalæmia or to hypocalcæmia rather than to any direct toxic effect of citrate on the cardiac muscle. Normally citrate is metabolised in the liver; but, as COOKSON et al. point out, this depends on the activity of the Krebs cycle, which is depressed by barbiturate anæsthesia [9] and possibly also by hypothermia.

From all the evidence it seems that stored citrated blood should not be used for intra-arterial transfusions. COOKSON et al. recommend instead oxygenated red cells suspended in a Ringer-Locke-gelatin solution, which they find can be stored for as long as citrated blood. But gelatin administered intravascularly is quickly eliminated from the circulation, and should be given cautiously where there is any suspicion of renal impairment.[10] Heparinised blood, another alternative, has to be prepared freshly, and its administration may be followed by post-operative oozing of blood at the site of operation. MELROSE and WILSON suggested that red cells should be suspended in salt-free dextran. Each of these alternatives has disadvantages, not the least of which is the complex method of preparation.

Further research is necessary, firstly to establish just how great is the risk of infusing citrated blood into an artery at cardiac and other operations; secondly to define the causes of its toxicity; and thirdly to devise a suitable medium in which to transfuse red cells.

Hypercalcæmia in Infants

IN pædiatrics biochemical methods have thrown fresh light on many known disorders and led to the discovery of several new ones. Of these new ones two of the more important are renal acidosis of infants, first described by LIGHTWOOD in 1935,[11] and idiopathic hypercalcæmia. Neither of these conditions can be diagnosed by the ordinary methods of examination, and clinically they are almost identical. In each the infant seems normal at birth and progresses well for the first few months. There is then a rapid loss of appetite and consequent failure to gain weight. Vomiting occurs, though it is seldom severe; but constipation may be troublesome. Polyuria and thirst are common, and the infant may become dehydrated. Muscle tone is much impaired, and this leads to delay in locomotor development. Yet, despite the similar clinical picture, the two conditions are quite different. In renal acidosis the urine is alkaline or neutral, while the serum shows a decrease in the alkali reserve; generally the serum-chlorides are slightly increased; the blood-urea level may or may not be above the normal, but the serum calcium and proteins are usually normal. In hypercalcæmia the serum-calcium level is always raised; the blood-urea level is also raised, but the alkali reserve and chlorides are normal; and the urine may be acid or alkaline.

This week we publish two papers on idiopathic hypercalcæmia. Dr. CREERY and Mr. NEILL review 16 cases which they have seen during the past two years. In some of these the age at onset was unusually early, and in 1 the symptoms dated from birth. This series included twice as many females as males, but there is little evidence of a significant difference in

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sex-distribution. None of the infants were fully breast-fed at the onset—a point that CREERY and NEILL regard as important, although presumably the infant whose symptoms dated from birth would not have received any feeds at all. Most of the infants recovered clinically, but in 3 the disease is still active. The duration of symptoms varied from a month to two years; but even after apparent clinical recovery the serum-calcium and blood-urea levels remain raised. Dr. LOWE and his colleagues describe 6 similar cases that they have seen in a period of eighteen months. One of their patients died from an intercurrent illness, but the others have all improved or recovered clinically even though the serum chemistry has not returned to normal. WILKINSON [12] states that the serum-calcium and blood-urea levels return to normal after some months; but these levels may rise again and symptoms may then recur.

Besides these 6 cases, LOWE et al. describe another patient with hypercalcæmia in whom the clinical picture and the course of the illness were very different. This case resembles those described by FANCONI et al.[13] in showing physical and mental retardation, hypertension, albuminuria, and osteosclerosis. Renal biopsy showed extensive damage to the kidney but shed little light on the ætiology. It seems unlikely that the changes found could be explained by a chronic pyelonephritis or a glomerulonephritis, but the possibility of a primary circulatory disorder cannot be excluded. Both in the cases described by FANCONI et al. and in that reported last year by CREERY [14] there was a harsh systolic murmur suggesting a congenital cardiac malformation. Is this second condition a severe form of the other syndrome? At present it is hard to be sure; but it seems unlikely that the two are different stages of the same disease process. The clinical features that they have in common—such as constipation, anorexia, and muscular hypotonia—could all be due to the hypercalcæmia itself, but in the severe form the skeletal and other abnormalities and the very different clinical course suggest that this is a quite distinct, though possibly related, condition.

The cause of both syndromes is unknown. SCHLESINGER et al.[15] suggest that the severe form may be due to a collection of separate defects of genetic origin resulting in multiple congenital abnormalities. Too few cases have been described for this explanation to be confirmed or refuted; many so-called congenital abnormalities originate, in fact, from disease initiated in utero. The milder form, since it is self-limiting, is probably due to some acquired metabolic disturbance. CREERY and NEILL suggest that it may be due to excessive intake of calcium and vitamin D associated with artificial feeding. In 4 of their cases, however, symptoms came on in the first two months of life, and it is difficult to conceive that in this period the intake could have been very much in excess. Abnormal sensitivity to vitamin D is another possibility. The known causes of hypercalcæmia, in addition to overdosage with vitamin D, include hyperparathyroidism, widespread malignant disease of the skeleton, and long immobilisation on frames or plaster casts. Clearly such immobilisation does not underlie the disorder, and the normal serum-phosphate levels do not suggest transient hyperparathyroidism.

Treatment is at present largely empirical. FERGUSON and MCGOWAN [16] administered various forms of specially prepared low-calcium "milk" to 4 infants with hypercalcæmia, whose condition improved rapidly after a few days; and, even though the disorder does tend to recover spontaneously, the very prompt response to treatment and the associated fall in the serum-calcium level suggest that therapy is beneficial. CREERY had an encouraging response to cortisone in 1 case. When, as often happens, the disorder is fairly mild no treatment is indicated; but while vitamin D is under suspicion it would be as well to withhold it. Many of these infants are at first thought to have a urinary infection—the more so because the urine quite commonly contains pus cells. Treatment with sulphadimidine is liable to lead to severe renal dysfunction and osteosclerosis,[17] and it seems unwise to give this drug for urinary infections in infants unless hypercalcæmia has been excluded.

Is this a new disease? The clinical picture is so vague—mainly one of failure to thrive—that it may have been with us for a long time masquerading under such names as marasmus, feeding difficulty, and "teething" [18]; and the tendency to spontaneous recovery would lead to credit being given to various forms of treatment and especially to changes in feeding. This must be a quite common disorder, for 42 cases have been reported from this country alone in the last year and many more have been recognised. If it is in fact a new disorder the increased consumption of milks and cereal foods fortified with vitamin D may be important. Is this the price we pay for the abolition of rickets?

12. Wilkinson, R. H. *In* Recent Advances in Pædiatrics. Edited by D. Gairdner. London. 1954.
13. Fanconi, G., Girardet, P., Schlesinger, B., Butler, N., Black, J. *Helv. pædiat. acta*, 1952, **7**, 314.
14. Creery, R. D. *Lancet*, 1953, ii, 17.
15. Schlesinger, B., Butler, N., Black, J. *Helv. pædiat. acta*, 1952, **7**, 335.
16. Ferguson, A. W., McGowan, G. K. *Lancet*, 1954, i, 1272.
17. Harris, L. C. *Arch. Dis. Childh.* 1954, **29**, 232.
18. See *Lancet*, 1953, i, 78.

Annotations

TUBERCULOSIS IN MIGRANTS

OPINIONS differ about tuberculosis in migrants. The receiving country tends to blame immigrants for bringing tuberculosis with them, while the immigrants feel that the conditions to which they come are responsible for the tuberculosis in their ranks. Naturally countries which are popular with emigrants are highly selective in the persons they accept; and in the years since the late war they have been particularly stringent in their requirements with regard to tuberculosis.

The position in these islands is exceptional, in that both emigration and immigration are occurring on a considerable scale. Quite large numbers of the native-born population emigrate to Commonwealth countries and the U.S.A., and they are required to undergo chest radiography before being accepted. Every chest physician in this country is aware of patients who wished to emigrate, usually before they knew of their disease, but who were rejected because of the finding of tuberculosis at routine medical examination. The Commonwealth countries and the U.S.A. are receiving a population of immigrants with less tuberculosis than the groups from which the migrants are derived. On the other hand there has been considerable immigration into this country, partly of displaced persons from Europe and partly by the continuation of migration from Eire. These groups have not been routinely examined for tuberculosis,

though obviously ill persons have not been accepted. The assumption has been that the proportion of immigrants with tuberculosis would be roughly the same as the proportion in the population-group from which they came; this might be appreciably higher or lower than the prevalence in the native British population.

This policy has given rise to concern, and it has been suggested that something should be done to prevent the immigration of tuberculous persons. The report of the Central Health Services Council for 1953, issued last week,[1] describes the results of an inquiry in the week beginning May 11 last year. During that week 128 Commonwealth citizens or aliens who had entered this country within the previous year occupied tuberculosis beds in England or Wales; this represents less than 5 per 1000 occupied tuberculosis beds. Of the 128 only 87 were thought to have had the disease on arrival, representing about 3 per 1000 beds. Of patients attending chest clinics for the first time in that week 0·6 per 1000 were Commonwealth citizens or aliens who had entered the country within the previous year; but the figures were appreciably higher in the North-west Metropolitan hospital region, where special interest has been shown in this subject. On the basis of the country-wide figures the Standing Tuberculosis Advisory Committee decided that tuberculosis in immigrants did not seriously menace the health of the country; but the Central Health Services Council has not accepted this view, and so it has advised the Minister, as it has done before, to introduce some form of control. From the context it is clear that the council has in mind radiographic examination of intending immigrants, and the exclusion of those with infectious tuberculosis.

That this is not the full answer to the problem is shown by Dr. Hess and Dr. Macdonald, whose article appears on a later page of this issue. They deal with tuberculosis in Irish immigrants to this country—specifically those that received hospital or sanatorium treatment in the North-west Metropolitan hospital region. Their list of nationalities represented in these hospitals does not include any outside the Commonwealth. Their findings suggest that the population of Irish immigrants of the boroughs of North-west London do indeed furnish an undue proportion of cases of tuberculosis requiring hospital treatment; but their findings concerning type and duration of disease indicate that routine radiographic examination at the time of immigration would have made little difference. From their results the excess of cases appears to be due to the lesser degree of tuberculinisation of the immigrants and their forebears, so that they are an especially susceptible group living under conditions of greater risk than they have previously experienced. Accordingly the preventive measures suggested by Hess and Macdonald are based on tuberculin-testing and B.C.G. vaccination (rather than on routine radiographic examination) before leaving Ireland.

The Central Health Services Council recognises that much more is involved in acceptance for immigration than medical fitness or freedom from infectious disease: we could not readily refuse on the grounds of tuberculosis those who fought on our side during the war, and later found their own countries barred to them. But, partly because of the strict requirements of other countries, it is probably necessary for this country to introduce precautionary examination of immigrants—though not necessarily to the same rigid standards—for if most countries receiving immigrants firmly exclude the tuberculous, the one or two which do not will receive an undue proportion of affected persons.

Fortunately the two facets of this problem are geographically distinct, so the application of suitable measures for each should not prove impossible.

1. Report of the Central Health Services Council for the year ended Dec. 31, 1953. H.M. Stationery Office. Pp. 36. 1s. 6d.

RUPTURE OF THE SPLEEN

RUPTURE of the spleen is usually thought of in connection with crushing injuries. But the normal spleen is small, mobile, and well protected, and rupture after a relatively slight injury should lead to a search for a disease affecting the spleen. In some diseases the spleen is liable to "spontaneous" rupture—or at least to rupture after injury so trivial as to pass unnoticed by the patient. In temperate climates the most important of the diseases causing spontaneous rupture is infectious mononucleosis (glandular fever).

Leibowitz [1] says that spontaneous rupture of the spleen is the commonest cause of death in this usually benign disease. Smith and Custer,[2] who had access to the records of the U.S. Army Institute of Pathology at Washington, found 7 cases. Of the 7 patients, 4 had died; in 2 of these 4 the splenic rupture had not been diagnosed ante mortem, while in the other 2 the spleen had been removed but the patients died from postoperative complications. The case-records show how difficult diagnosis of this sort of case can be. Often the onset of infectious mononucleosis is very insidious without prominently enlarged lymph-glands or spleen in the first two or even three weeks; so when the spleen ruptures no blood disease has been thought of. Smith and Custer also remark that in infectious mononucleosis the spleen enlarges rapidly, is friable, and will not stand up to much trauma. One of their patients was a young man, aged 20, who had been ill with non-specific symptoms for eleven days. On admission to hospital his cervical lymph-nodes were noted to be enlarged and his spleen was palpable. Examination of the blood showed 17,500 white cells per c.mm. with 72% lymphocytes; and the heterophile-agglutination test was positive, 1 in 1280. Infectious mononucleosis was confidently diagnosed. A week after admission, after an attempt to palpate the spleen, symptoms indicating rupture of the spleen appeared; and at laparotomy five hours later the spleen was found to have a huge rent extending from the upper pole to the mid-zone. The spleen was removed and the patient recovered without further incident. But in some of Smith and Custer's patients, splenic rupture occurred when neither the clinical picture nor the laboratory findings were fully diagnostic; and in our correspondence columns this week Dr. Spink describes a case of this type. A woman, aged 34, who was admitted to hospital with a diagnosis of ruptured ectopic pregnancy was found to have a ruptured spleen. There was no history of injury; the white blood-cells numbered 6000 per c.mm. with granulocytes 81%, lymphocytes 2%, and monocytes 16%; the heterophile-agglutination test was positive, 1 in 320. Unfortunately this patient died two days after operation. The histological changes in the spleen confirmed the diagnosis, and Spink saw one artery in which the wall was invaded by glandular-fever cells with loss of normal structure.

Smith and Custer also noted invasion of blood-vessel walls with glandular-fever cells, and they point out that such cells can invade and weaken the trabeculæ and the capsule of the spleen; one of their photographs shows the capsule almost destroyed at a point some distance from the original rupture. They found similar changes in unruptured spleens from patients with infectious mononucleosis. Clearly infectious mononucleosis has to be considered when rupture of the spleen occurs; and we should be careful about palpating the spleen in this disease.

Spontaneous rupture of the spleen has been recorded in other blood diseases. Recently Frohner [3] has reported 2 cases of rupture associated with trauma, and both patients proved to have primary blood diseases. One was

1. Leibowitz, S. Infectious Mononucleosis. New York, 1953.
2. Smith, E. R., Custer, R. P. *Blood*, 1946, **1**, 317.
3. Frohner, R. N. *Ann. intern. Med.* 1954, **40**, 501.

a milkman, apparently in good health, who had a fall which caused his left elbow to be banged against his left upper abdomen. Two days later he was admitted to hospital with pain in the left side of the abdomen. On admission he was pale and icteric, and there was a palpable mass in the left hypochondrium; his hæmoglobin level was 8 g. per 100 ml., and white blood-cells amounted to 15,000 per c.mm. (mainly polymorphs). Investigation made it clear that the patient had a congenital hæmolytic icterus; there was a positive family history, and the red-cell fragility was grossly increased. Since the spleen was enlarging, laparotomy was done, and the spleen, weighing 987 g., was removed; there had been a rupture at the upper pole, but, fortunately for the patient, the bleeding seemed to have been limited by adhesions. Frohner's second patient was a man, aged 42, who had fallen 4 feet from a scaffolding five weeks before his admission to hospital as a case of abdominal emergency. He was found to have chronic myeloid leukæmia with a white blood-cell count of 300,000 per c.mm. A large ruptured spleen was removed next day, but the patient died ten days later.

Frohner refers to splenic ruptures associated with pregnancy, congestive splenomegaly, Gaucher's disease, chronic and acute leukæmias, and some other diseases, including, of course, chronic malaria. Such evidence constitutes a warning against regarding trauma as the sole cause of splenic rupture.

THE COCONUT SIGN IN OSTEITIS DEFORMANS

In examining two cases of Paget's disease—in men of 68 and 74—Frenkel [1] found that percussion of the skull elicited a sound like that obtained by tapping a cracked coconut. This sound resembled to some extent the tympanitic ("broken pot") sound described by Sahli [2] in cases of hydrocephalus and brain tumour, especially in children. Bruns is said to have detected a tympanitic sound in senile osteoporosis, but Sahli questioned this finding. Frenkel has sought his coconut sound in normal people as well as in patients with various lesions of the skull including metastatic carcinoma, multiple myeloma, and fragilitas ossium; but it has always been absent. In senile osteoporosis a change in the percussion note was occasionally noticed, but it was never like the cracked coconut. Frenkel hopes that recognition of his sign may occasionally permit the diagnosis of Paget's disease before the bones have been radiographed or the alkaline-phosphatase content of the serum has been determined.

RISK OF POLIOMYELITIS

In a study of multiple cases of poliomyelitis in the household, Siegel and Greenberg [3] noted a relation between the clinical type in the first and subsequent cases. They diagnosed poliomyelitis on symptoms of acute fever, stiffness of the neck or back, and increase in white blood-cells in the cerebrospinal fluid; and they distinguished paralytic and non-paralytic forms. They surveyed multiple cases in 167 households in New York city from 1949 to 1952, and found 70% of subsequent paralytic cases when the initial case was paralytic and 73% of non-paralytic cases when the initial case was non-paralytic. When the initial case was paralytic, there was a higher probability that more than one case would develop in a family, a greater age-span of susceptibility to subsequent infection, and a higher fatality-rate.

The interpretation of these findings is far from clear. The clinical diagnosis of paralytic poliomyelitis is usually straightforward, but non-paralytic poliomyelitis cannot be distinguished clinically from the various types of aseptic meningitis. Siegel and Greenberg's group of "non-paralytic poliomyelitis" may include conditions other than poliomyelitis which confuse the issue and make it difficult to estimate clinically the risk of poliomyelitis spread. What is required is a similar investigation combined with serological studies and attempts at isolation of virus. The rate of multiple infections of household contacts is much higher than the rate in the general population—which indicates that spread of the disease usually requires fairly intimate contact. It would be interesting to know the proportion of paralytic to non-paralytic cases (with laboratory confirmation of clinical diagnoses) in family contacts and in the general population, as a possible guide to any relation of the degree of exposure to the subsequent incidence of paralytic cases. But it is doubtful if even with the refined laboratory techniques of today any pattern would emerge from such a tangled web.

1. Frenkel, M. *Ned. Tijdschr. Geneesk.* 1954, **89**, 17.
2. Sahli, H. Lehrbuch der klinischen Untersuchungsmethoden. Leipzig, 1920; vol. 2, p. 848.
3. Siegel, M., Greenberg, M. *J. Amer. med. Ass.* 1954, **155**, 429.

SMELLING

IRON and its salts have a strong taste, and many people would say some smell too. But in a letter on p. 143 Dr. Haler declares that they have no characteristic smell at all. Man's sense of smell is poor, varying between different people, partly according to their diet and their power of olfactory memory,[1] so it is not surprising that smellers often disagree. But the division seems unusually sharp in the case of iron, for there are those who say they can smell it strong and clear and those who say they can detect nothing. As Dr. Haler points out, anything with a strong taste may often be assumed (wrongly perhaps) to have a strong smell; but it seems unlikely that this is the whole explanation.

The sense of smell, fickle as it is, is now seldom used in diagnosis. Yet many disorders are associated with characteristic smells—for instance, pemphigus vulgaris (honey), favus (mice), cholera (ammonia), gout (whey), and ozæna (bedbugs),[2] while in cases of chronic pulmonary tuberculosis different clinicians have noted a smell of fresh plaster, wet leaves, dank hay, corn, cinnamon, or rancid goat's milk.[3] Most of the stenches of illness [4] are due to bacterial activity, in sweat, in pus, or in damaged tissues; others, usually not so unpleasant, are caused by abnormal metabolic products—for instance, indole in hepatic failure, and acetone in diabetes. Some supposed diagnostic smells are elusive: few would hazard a diagnosis of pregnancy by its distinctive aroma.[5]

LIVER NECROSIS IN LEUKÆMIA

WORKING in the pathology department of the University of Manchester, Lodge and Woodcock [6] were surprised to find extensive hepatic necrosis at necropsy in 3 cases of leukæmia. Hepatic necrosis is not a recognised complication of leukæmia; infiltration, which may even displace a considerable proportion of liver tissue, is met with, but not often in acute leukæmia. Further inquiries revealed that all 3 patients had been given sulphonamides during their last illness; and focal or diffuse hepatic necrosis is known to be an infrequent complication of sulphonamide treatment. The facts about the 3 patients were briefly as follows.

The first patient was a girl, aged 8, who was given two courses of sulphamezathine on account of sore throat and pyrexia; this treatment proved ineffective, and she was admitted to hospital where acute lymphatic leukæmia was promptly diagnosed. The patient died two days after admission, and at necropsy the liver showed diffuse necrosis.

The second patient was a man of 24 with acute lymphatic leukæmia; his first symptom was a neck boil, for which he had been given sulphathiazole; he was treated by blood-transfusion but died after two months. The liver showed extensive areas of necrosis with complete destruction of liver cells.

1. See Moncrieff, R. W. The Chemical Senses. London, 1951.
2. Boucher, R. *Un. méd. Can.* 1947, **76**, 1450.
3. Marmion, T. Personal communication, 1954.
4. Engel, C. *Med. J. Aust.* 1953, ii, 254.
5. Coughlin, R. E. *N.Y. med. J.* 1913, p. 124.
6. Lodge, K. V., Woodcock, A. S. *Amer. J. Path.* 1954, **30**, 361.

The third patient was a man of 75 with lymphatic leukæmia who had been given sulphonamide for a bronchial infection. He also survived only a few days, and his liver showed numerous areas of focal necrosis.

Lodge and Woodcock examined tissue from 97 other cases of leukæmia, in 4 of which sulphonamides had been given. In 27 cases there was massive leukæmic infiltration of the liver, but none showed necrosis of liver cells like that seen in these 3 cases. Lodge and Woodcock are reasonably sure that sulphonamide was responsible for the acute necrosis of the liver, and therefore possibly for the exceptionally early death, in these 3 cases. The evidence from the reported cases of hepatic necrosis due to sulphonamides has usually been thought to indicate that the patients were unusually sensitive to this group of drugs; and in leukæmia there seems to be an unusual danger of such a complication. Lodge and Woodcock therefore recommend that antibiotics rather than sulphonamides should be used for the treatment of the infective complications of leukæmia. Unfortunately leukæmia is rarely diagnosed until failure of sore throat, bronchitis, or other symptom to respond to treatment has led to more careful examination, the detection of anæmia and perhaps enlarged lymph-glands or spleen, and the blood examination which often, but not always, shows the true state of affairs.

HOSPITAL PHARMACISTS

THE hospital pharmaceutical service is in a precarious state. In the past few years recruitment has steadily declined, while under the National Health Service the demands on the service have grown. The shortage of pharmacists, originally confined to the smaller hospitals, has now become universal; even the teaching hospitals, which before the late war received scores of applications for every post, now cannot obtain enough staff. The report of the Central Health Services Council for 1953 includes the findings of a committee which, under the chairmanship of Sir Hugh Linstead, M.P., has been examining the problem.

The Linstead Committee rightly suggests that "pharmacy is a science and an art of its own, a distinct section of the hospital service, and that it requires for its healthy development the primary condition that effective advice and decisions upon pharmaceutical matters shall be in the hands of pharmacists." In many of the smaller hospitals the position of the pharmacist is very unsatisfactory, probably because of ignorance of the difference between pharmacists and dispensers. The pharmacist belongs to a full and independent profession with its own statutory qualifications and a registering body with disciplinary control over its members. He must undergo a three-year academic course of university standard as well as a period of practical training lasting one or two years. Many now have honours university degrees involving a four-year academic course in addition to the practical training. The complexity and, often, the instability of many of the newer drugs calls for thorough knowledge of their chemical, physical, and pharmacological properties. It is not generally realised that faulty formulation or storage may result in the complete inactivation of many medicaments, with grave consequences for the patient treated or considerable loss to the hospital if they have to be destroyed.

Many hospitals have advertised posts for a year or longer without receiving a single application, and most hospitals are now employing more locums than permanent staff—the locum's salary, which is not controlled by the Whitley Council, is usually at least 50% higher than the basic salary for permanent staff. The employment of temporary staff and of a greatly increased proportion of unqualified persons has severely impaired the service, and many chief pharmacists have reported a greater number of serious mistakes in the past year than in the previous decade. Some hospitals have had to discontinue outpatient dispensing or special sections, such as sterilisation or manufacturing laboratories. This involves inconvenience to patients, financial loss to the hospital, and inconvenience to the medical staff whose prescribing is then confined to preparations available ready-made from manufacturing firms. For "the lamentable shortage of recruits for hospital work" the report gives three reasons: (1) the lowness of initial salaries compared with those paid to newly-qualified pharmacists in retail pharmacy, and of maximum salaries compared with those paid in senior posts in industry; (2) unsatisfactory status in some hospitals; and (3) lack of knowledge among students and pharmacists of the interest to be found in hospital pharmacy. The first two factors must be remedied before any improvement in recruiting can be expected; but, assured of reasonable prospects, many pharmacists would undoubtedly prefer hospital pharmacy to the more stereotyped work in retail pharmacy.

The universities and the Pharmaceutical Society now make pharmacology one of the main subjects in the pharmaceutical syllabus, and the hospital pharmacy should be a source of information on all advances in treatment by drugs. A well-equipped pharmacy can be most useful to the medical staff in the development of new drugs, in the formulation of new preparations, and in research into the stability and efficacy of drugs. The pharmacist has also an important part to play in advising on the economics of prescribing and in formulating and preparing drugs in the cheapest form compatible with efficiency. If the problems of salary and status are overcome and adequate staff are obtained, together with better accommodation in some hospitals, the future for hospital pharmacy will be bright and the hospital pharmacist will attain his rightful place as the colleague of the physician in ensuring the best possible medication for the patient.

A COLLEGE JUBILEE

THIS week the Royal College of Obstetricians and Gynæcologists has been celebrating its silver jubilee. In an inaugural address on Tuesday, Mr. A. A. Gemmell, the president, said that the college had now enjoyed twenty-five years of liberty from the thrall of the physicians and surgeons. He remarked on the interest in the affairs of the college shown by the presence of so many colleagues from overseas, both from the countries of the British Commonwealth and from the U.S.A. He expressed the gratitude of the college to Queen Elizabeth, the Queen Mother, who as Duchess of York became patron of the college, and who was showing her continued interest in its affairs by consenting to be present at the reception that evening. Plans were in hand for building a new college to replace the building presented by Blair-Bell, the first president; this would provide a museum for teaching purposes and more accommodation for the college's expanding activities. The college must be constantly watchful to maintain high standards of training and examination, so that the M.R.C.O.G. might remain the only necessary hallmark for anyone practising obstetrics and gynæcology. The President received on behalf of the council gifts and messages of good will from regional councils of the college in Australia, New Zealand, and Canada, from fellows and members in South Africa, and from other institutions.

At the senate house of the University of London on Tuesday afternoon, Prof. R. W. Johnstone, a past vice-president, presented for admission to honorary fellowship Dr. Doris Gordon, Dr. J. V. Meigs, Lord Simonds, and Sir Arthur Sims.

Sir HARRY PLATT has been elected president of the Royal College of Surgeons of England in succession to Sir Cecil Wakeley, who has held office for five years.

Public Health

PULMONARY TUBERCULOSIS IN IRISH IMMIGRANTS AND IN LONDONERS

COMPARISON OF HOSPITAL PATIENTS

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THE belief that the Irish immigrant is unduly susceptible to pulmonary tuberculosis is fairly common and is supported to some extent by statistical evidence. Cobbett (1925) pointed out the excessively high mortality from tuberculosis of the Irish-born population of New York towards the end of last century; Bradbury (1933) commented on an apparent undue susceptibility among the Tyneside Irish; and the Prophit Survey (Daniels et al. 1948) found that both Irish and Welsh nurses were rather more liable than English nurses to develop tuberculous lesions. The epidemiological implications arising from the possible existence of a racial or ethnic susceptibility appear to call for closer examination.

Present Investigation

It was suspected that among the Irish patients with pulmonary tuberculosis in Clare Hall Hospital an initial onset with pleural effusion was relatively common; the records of 470 patients in the hospital at the time were therefore investigated, with the following results:

—	Males		Females	
	Irish	Others	Irish	Others
Onset with P.E.	3 (*16·6%*)	9 (*5·9%*)	10 (*27·7%*)	12 (*4·5%*)
Total	18	152	36	264

The figures were small but indicated that a significantly higher proportion of Irish patients started their illness with a pleural effusion, the difference being more noticeable among the females. According to the time-table put forward by Wallgren (1948), pleural effusion occurs most commonly about three to seven months after primary infection; the implication was, therefore, that some Irish patients, resident for a longer period, had received their primary infection *after* arrival in England. In planning a larger investigation this possibility was kept in mind, and information was collected under the following headings:

Place of birth.
Date of birth.
Date of arrival in England.
Occupation in England.
Clinic area from which admitted.
Date of first diagnosis.
Family history of tuberculosis.
Possible source of infection.
History of pleural effusion.
Type of disease.

Patients in five major hospital units in the North West Metropolitan Region were interviewed and their records and radiographs examined. It was felt that a control group was desirable; but, since the remaining patients included Welsh, Scots, Indians, Negroes, and Cypriots as well as English, it was decided that for purposes of comparison a group of patients born in London of London-born parents be examined. A third group of patients born in this country of Irish parents or with Irish grandparents was also included. The numbers of these different classes of patients examined were as follows:

	Males	*Females*	*Total*
Londoners	49	80	129
Irish	53	51	104
Of Irish descent	39	20	59
Total	141	151	292

Tuberculosis beds in the hospitals visited numbered about 900, almost equally apportioned between males and females. Thus 1 patient in 9 proved to be Irish, and 1 in 7 a Londoner, in the manner defined. The population of the sector of Greater London drained by these hospitals is about 1,500,000, but not all the tuberculous patients from this area in hospital would be in the hospitals concerned.

According to the 1951 Census Report (One per cent. Sample Tables) of the total Greater London population of 8,344,100, 3,617,400 (43·4%) were born within the administrative county of London; and 209,300 (2·5%) were born in Ireland. Our criteria for a Londoner were geographically wider in that the place of birth was Greater London, but genealogically narrower in that the parents also had to be born in this area. It is not easy to compute the effect of these modifications, the first tending to increase, and the second to diminish, the percentage of London-born; but, if only 12·5% (1 in 8) of the population in our sector fulfilled the necessary criteria, Londoners would on this basis outnumber the Irish-born by 5 : 1. In hospital, however, we found the ratio to be only 5 : 4 (actual figures 129 : 104) in favour of the Londoner. The Irish, because of their homelessness or poor living conditions, probably enjoyed some priority in securing admission; but, even so, it is difficult to avoid the implication that the proportion of Irish patients found in the hospitals visited is unduly high—probably not less than three times that expected on the basis of relative numbers at risk.

Results

PLACE OF BIRTH

By definition the Londoners were born in the Greater London area. Since their parents were also born in the Metropolis, they can be regarded as an *urban* group.

Of the Irish group 96 were from Eire and 8 from Northern Ireland; 48 (91%) of 53 males and 42 (84%) of 51 females were born and brought up in rural areas (usually on a farm); most came from the western and south-western counties of Eire. They were therefore, for the most part, of emphatically *rural* origin.

Patients of Irish ancestry were included if born anywhere in Britain.

AGE ON ARRIVAL IN ENGLAND

At the time of emigration 39 (73%) of 53 Irish males and 47 (92%) of 51 Irish females were aged 15–25—i.e., they belonged to an age-group which is everywhere recognised to be particularly susceptible to pulmonary tuberculosis. Since Price (1952) found only 34·1% of 2515 rural Irish tested to be Mantoux-positive to 1 : 100 O.T. at the age of 14–19, and 54·2% at 20–24, it seems that from a third to a half of rural Irish immigrants aged 15–25 may be non-reactors to tuberculin. What proportion of our patients were in this state on arrival in England cannot be ascertained, but the known liability of the Mantoux-negative young adult to develop progressive tuberculosis soon after infection is worth keeping in mind.

OCCUPATION

Irish	*Male*		*Female*
Labourers	30	Catering trade ..	17
Catering trade	13	Nursing and hospital	12
Clerical	3	Clerical	2
Factory	3	Factory	7
Various	4	Housewives	8
		Domestic workers ..	5
Total	53	Total	51

Londoners	*Male*		*Female*
Labourers	10	Catering trade	6
Clerical	14	Nursing and Hospital	1
Factory and engineering	13	Clerical	15
Films	3	Factory	19
Services	3	Housewives	29
Students	2	Stage	2
Various	4	Students	2
		Teachers	2
		Shop assistants	4
Total	49	Total	80

There is a much higher proportion of manual and unskilled workers among the Irish of either sex; of the males the building and catering industries absorbed by far the greatest number; of the females the catering trade, nursing, and domestic service accounted for two-thirds, and it is also noticeable that a considerably smaller proportion of the Irish women were married. There were fewer Irish of either sex engaged in clerical or factory work; typically, the young Irishman became either a builder's labourer or a barman, and the Irish girl a waitress, a barmaid, a domestic worker, or a nurse. Most of either sex came to London straight from a farm, only a few having spent some time in Dublin before emigrating.

CLINIC AREA FROM WHICH ADMITTED

The clinic areas could be described as central (Islington, St. Pancras, Paddington, Hammersmith, and Willesden) and suburban (Finchley, Edgware, Harrow, Barnet, and St. Albans).

The 1951 census gives the population of the administrative county of London as 3,346,400, of whom 115,800 (3·5%) were Irish born, and that of suburban London as 4,997,700, of whom 93,500 (1·9%) were Irish-born. The concentration of Irish in central London is therefore nearly twice that in suburban London. Clearly, too, there is more risk of infection where population is denser, the number of daily contacts greater, houses older, and overcrowding more prevalent. Of our 104 Irish patients 84 were admitted from clinics in the central area and only 20 from suburban clinics; many came from lodgings or had no settled abode, and their environment and social circumstances generally suggested a lower standard of living than that of the Londoner.

DATE OF FIRST DIAGNOSIS

Of the 104 Irish patients only 6 (4 males, 2 females) were first diagnosed in Ireland, and of these all except 1 broke down again within five years of arrival in England.

The intervals between arrival in Britain and diagnosis (or relapse of the above previously diagnosed cases) were as follows:

	Males	*Females*
Diagnosed in less than 2 years	12 (*23%*)	19 (*37%*)
,, ,, 2–5 ,,	9 (*17%*)	17 (*33%*)
,, ,, after 5 ,,	32 (*60%*)	15 (*30%*)

Thus 70% of the females were diagnosed within five years of arrival in this country, over half of these being picked up within two years. With the males, on the other hand, 60% were in the country five years or more before being diagnosed. Women appear to break down considerably sooner after arrival than men, some of whom developed evident disease only after fifteen to twenty years' residence. The sex difference should not be overemphasised, however, because men break down in middle life with tuberculosis more commonly than women.

Analysis of the patients according to age at time of survey gave the following results:

	Irish		*Londoners*	
	Males	*Females*	*Males*	*Females*
More than 30	34 (*64·2%*)	18 (*35·3%*)	24 (*49%*)	32 (*40%*)
Less than 30	19 (*35·8%*)	33 (*64·7%*)	25 (*51%*)	48 (*60%*)
Total	53	51	49	80

In both groups there are proportionally more males than females aged more than 30. The sex difference is more pronounced in the Irish group, but allowance has to be made for the fact that of recent years there has been a tendency for Irish males to return home after two years' residence, when they become liable for military service; others return after seasonal agricultural work. Any such who later developed tuberculosis would not find their way into a London hospital unless they had again returned to this country; presumably some females, also, return home before falling ill. In the decade 1936–46 male immigrants from Eire to Britain outnumbered females by 3 : 2, owing partly in the later years to the 1939–45 war; in 1946–51 the proportions were reversed, women outnumbering men by 3 : 2. Among comparatively recent arrivals, therefore, there would be more Irish women, mostly in the 15–25 age-group, than men; on the other hand, most of the male immigrants of 1936–46 would be aged more than 30 in or before 1946–51. These factors would tend to increase the numbers of females aged less than 30 and males aged more than 30 at risk in the five years preceding the present survey. On the whole there appears to be no great difference as regards age between the Irish and the Londoners.

FAMILY HISTORY OF TUBERCULOSIS

With the Irish patients reliance had to be placed on the patient's own verbal account of tuberculosis in the family, most of whose members were, of course, still in Ireland; the questioning, therefore, was particularly thorough, because we fully expected attempts at evasion. The patients, however, answered willingly, and there appeared to be little attempt to conceal or distort the truth; the nature of their complaint being known and accepted, information about tuberculosis in other members of the family was not withheld. In the London group the patient's verbal history could be checked by reference to the contact sheet supplied by the chest clinic, to which it usually corresponded with reasonable accuracy.

So far as could be ascertained, only 5 (4·8%) of 104 Irish patients, and 22 (17·1%) of 129 Londoners had a history of tuberculosis in parents or grandparents—i.e., ancestral history. A possible *family* source of infection was found in 11 Irish (10·6%) and 28 Londoners (21·7%). In neither group was there any significant difference between males and females. One noteworthy feature among the Irish was that when a family history of tuberculosis was found it was not infrequently of disastrous proportions, several members of the family (in one case 7) having died of tuberculosis.

POSSIBLE SOURCES OF INFECTION

	Irish		*Londoners*	
	M (53)	*F (51)*	*M (49)*	*F (80)*
Family (including collaterals)	7	4	12	16
Fellow workers	3	3	2	3
Friends	2	2	—	6
Nursing or hospital work	—	12	—	—
Spouse or betrothed	—	—	2	3
Services	1	—	7	—
Other	2	—	—	2
	15	21	23	30

The Irish being for the most part cut off from their relations in Ireland for the greater part of each year, prolonged exposure to a family source of infection in the years immediately preceding the survey would be more likely in the London group; the chances of the Irish being infected from an *outside* source were therefore relatively greater in these years. In a few instances, however, the source of infection appeared to be a brother or a sister who had arrived in this country either earlier or at the same time as the patient.

A family history of tuberculosis was only half as common in the Irish group as in the London group; the London contacts, however, had mostly been radiographed, and the results were available. Even so, the frequency with which a clean bill of health had to be recorded in the case of the Irish was rather unexpected.

The numerous instances of large families with parents either alive and well or dying at an advanced age again tended to suggest that infection after arrival in England was not uncommon. Further, where there was exposure to a known source of tuberculous infection subsequent breakdown appears to have been relatively frequent. Nursing is one such obvious source, routine tuberculin testing and B.C.G. vaccination not being in operation at the relevant time.

TYPE OF TUBERCULOSIS

Detailed investigation of the course of the tuberculosis was not undertaken in this survey, but it was apparent that in many of the Irish patients an acute onset with rapid progression was common. Of the 19 females diagnosed as tuberculous within two years of arrival in this country, 5 began with a pleural effusion, and 12 of the remainder had progressive primary lesions, many of which had proceeded to cavitation and subsequent endobronchial dissemination. Thus nearly 90% of these girls could be regarded as suffering from the effects of a severely progressive primary infection. With the males, on the other hand, only 3 of 12 diagnosed within two years of arrival could be said to be in like case: 2 had effusions, and the other (a boy aged 17) a typical primary complex.

Of the 33 Irish girls aged less than 30, 24 (72·7%) appeared to have progressive primary lesions; of the London girls aged less than 30 there were 31 (64·6%) out of 48. Though this indicates that, of London girls who break down, a similar percentage reveal progressive primary lesions at about the same age as Irish girls, the probability is, when the relative numbers resident in the London area are taken into account, that the *rate* of breakdown of primary lesions is considerably higher in the Irish group.

Another indication of the relative severity of the primary infection in Irish girls was the higher proportion showing incidence with pleural effusion—9 (17·6%) of 51 against 5 (6·3%) of 80 London girls. As regards the males, pleural effusion was also more common in the Irish—5 (9·4%) of 53 against 2 (4·1%) of 49 (cf. figures for Clare Hall patients cited earlier). A history of effusion was only accepted if fluid had been obtained by aspiration, or if there was radiological evidence of the actual effusion. Obliterated costophrenic angles were not included.

Of the 9 females who came from Irish cities only 1 developed a lesion of the progressive primary type; of the 5 city males, none.

In the Irish males as a whole there was a significant preponderance of patients with pulmonary lesions of the hæmatogenous type (bilateral apical foci or bilateral lesions of symmetrical distribution in the upper and middle lung fields):

	Irish		*Londoners*	
	Males	*Females*	*Males*	*Females*
Hæmatogenous pul. tub. ..	35 (66%)	19 (37·3%)	18 (36·7%)	34 (42·5%)
Total ..	53	51	49	80

Hæmatogenous pulmonary tuberculosis seems to be more common in later life, especially in the male, and to be particularly common among middle-aged Irishmen. When this type of tuberculosis was found in the younger patient (of whatever nationality) there was invariably a family history of tuberculosis.

PATIENTS OF IRISH DESCENT (BORN IN ENGLAND)

In this group the incidence of tuberculosis among parents and grandparents, either born in Ireland or but one generation removed, was 12 (20·3%) of 59, significantly higher than in the Irish group proper—5 (4·8%) of 104. This is readily understandable if those immediate ancestors are regarded as containing many susceptibles introduced, some time previously, into a heavily infected environment.

A *family* history of tuberculosis was present in 22 (37·3%) of 59, against 11 (10·6%) of 104 Irish, again suggesting the higher incidence of tuberculosis that one would expect among susceptibles exposed to infection. Compared with the London-born group, both ancestor history and family history were also higher in those of Irish descent; only the latter, however, could be considered statistically significant. It seems reasonable to suggest that the immigrant parents or grandparents had at least as heavy a barrage of infection to pass through as the present generation of immigrants whom we were surveying, and that indications of a high casualty-rate were to be expected.

The next step was to elicit what evidence there was about the manner in which the patients of Irish descent were standing up to infection. So far as we could ascertain, they seemed to be supporting their illness as well as the Londoners from the clinical point of view; another pointer was that the incidence of effusions (3 [5·1%] of 59) approximated to that of the London group (7 [5·4%] of 129) rather than that of the Irish-born (14 [13·5%] of 104), suggesting that primary infection was less frequently of the severely progressive type than in the recent Irish immigrants.

The occupations of the group with Irish forebears also tended to resemble those of the London-born rather than those of the Irish immigrants—fewer labourers and café employees, more clerical workers and skilled factory workers. It seemed that their families had to some extent improved their economic circumstances, with a consequent rise in the social scale. As regards tuberculosis, they seemed to have ridden out the first fury of the storm.

Discussion

The early life and background of the Irish-born patient is very different from that of the Londoner. As opposed to the intensely urban character of the latter's upbringing, 9 of every 10 Irish males and 3 of every 4 Irish females in this survey were born and brought up in a sparsely inhabited rural environment, mostly in the western and south-western counties of Ireland. In these districts the proportion of negative reactors to tuberculin below the age of 25 is generally high, owing perhaps partly to a lower incidence of bovine infection. It is also probable, however, the number of daily contacts being so much fewer, that the degree of exposure to human-type bacilli in childhood and adolescence is less compared with that experienced by the English city dweller. Further, the ancestors of the Irish patients were for the most part born and brought up in an environment not significantly different, as regards risk of infection, from that of their offspring; natural selection would not have eliminated many susceptible individuals, and the proportion of the latter in the Irish country-side should therefore be considerably greater than in London, where for generations there has been exposure to heavy infection.

While it is thus probable that many young Irish men and women about to emigrate have not only not overcome the hazard of primary infection but, because of the like absence of exposure of their forebears, are also in no favourable immunological position, genetically there is another aspect of the problem which merits consideration. We get a glimpse of this in the disastrous family history of tuberculosis of a few Irish patients. This seeming anomaly merely emphasises the above-mentioned postulate regarding the high proportion of susceptibles among the native rural Irish—when infection *is* introduced into a susceptible family it can wreak havoc. We heard of an Irish soldier invalided home from England with a positive sputum; several of his family (previously free from infection) subsequently developed tuberculosis, the time relationships leaving little doubt that he was the source. The grossly tuberculous family history appears to be merely the obverse side of the same coin—that of susceptibility.

Morbidity after infection where there are many susceptibles is liable to be high; this may be due to

simple progression of the tuberculosis or, later, to relapse of latent lesions, which, stable perhaps under favourable conditions, become active again when environmental or even physiological factors—e.g., puberty—impose additional strain. Breakdown arising from relapse or recrudescence of an earlier infection is one way in which clinical tuberculosis may develop in a susceptible Irish immigrant. The infection may have produced a healed primary lesion, and of 24 Irish patients who had developed visible primary foci recrudescence in the calcified pulmonary component appeared to have taken place in 8. Of the 6 patients in our series known to have tuberculosis before leaving Ireland 5 were diagnosed as having relapsed within five years of arrival in England. No doubt the altered environment and additional strain of life in the poorer quarters of a big city accelerated breakdown.

Recrudescence of pre-existing lesions could not, however, be said to be the main method of producing tuberculosis in the immigrant Irish. Especially among the younger women there were many instances of breakdown due to direct progression of the primary lesion, with resulting pleural effusion (often followed by phthisis) or liquefaction of the caseous pulmonary component and subsequent endobronchial dissemination as described by Pagel et al. (1953); it is not considered likely that many of these resulted from infections sustained immediately before emigration. We have already suggested that a third or more of new arrivals may be tuberculin-negative, and it is from this group that, we believe, are recruited many of those who later break down with tuberculosis. Further, the probability is that many have also a low level of *natural* resistance; for, as Neumann-Grigg (1949) says, "Everyone, while travelling, maintains the same resistance against tuberculosis as that related to the epidemiological phase of his original origin."

"Epidemiological phase" is important. Ireland did not experience the peak of its epidemic wave of tuberculosis until much later than England. Clarke (1952) pointed out:

> "It is probable that the very high tuberculosis mortality in England throughout the seventeenth and eighteenth centuries, possibly amounting to one-sixth of all deaths, caused the elimination of some susceptible stock. Tuberculosis kills at an early age and in those times many whole families were wiped out by the disease. This social background may explain the apparently higher resistance to tuberculosis of the Englishman as compared with the Irishman or Scotsman, among whose countrymen widespread tuberculosis occurred much later."

In other words, Ireland is now at a stage of development passed by England some considerable time ago, and it is to this fact rather than to any "racial" weakness in the Irish that the higher proportion of susceptibles is due.

The racial theory is an easy trap to fall into: Arnould (1936) postulated a "hereditary physico-chemical constitution" common to four Celtic groups (Breton, Welsh, Irish, and Northern Scots) and differing from that of neighbouring populations in that it offered a favourable soil for the development of tuberculosis. However, Clarke (1952) says:

> "There is no single ethnic type identified with the Celtic race, which is essentially a language and cultural group. Late tuberculisation and other epidemiological and environmental conditions form a sufficient explanation for the higher rates among the Breton, Welsh and Irish populations. . . . Tuberculosis is only indirectly a racial problem and the causes of a high morbidity are social, economic and epidemiological rather than racial."

The tendency for the females to develop progressive cavitating primary lesions is readily understandable on the basis of tuberculin-negativity and low natural resistance; the position regarding the males, however, is less easy to explain. Although we found fully as many males as females in the hospitals visited, most had been in this country for five years or more before breaking down. Progressive primary lesions were distinctly uncommon, though they may have occurred in Irishmen who returned home. Undoubtedly there is a true sex difference in the development of tuberculosis, and the striking preponderance of lesions of the hæmatogenous type in males suggests that, whereas primary infection may take place at about the same age in both sexes, there is more often a long latent period in males before breakdown: it is perhaps only after ten years or more that apical deposits recrudesce, or exacerbation of an old tuberculous lesion in some other part of the body leads to invasion of the blood-stream and consequent extensive symmetrical involvement of both lungs. Whatever the explanation, it seems that the common factor of susceptibility is present in many Irish immigrants of either sex, though its manifest results in males are longer delayed. There are also, of course, susceptibles in the London-born of either sex, but there are proportionally more among the Irish.

The main feature of interest arising from this survey is the implied importance of migration as a fundamental factor in the epidemiology of tuberculosis. This concept, although its implications have been somewhat overlooked, is far from new: Graves (1843) wrote:

> "Tuberculosis has ravaged the Pacific Islands and other lands remote until recently from the world's highways; and it is well-known that the inhabitants of our own more distant islands, the Orkneys, Shetlands and Hebrides, are more liable than men of the mainland to contract phthisis *when they migrate to the centres of denser population*." *

Calmette (1921) pointed out that "peoples who have been longest isolated from the disease proved to be the most susceptible to it *when brought into infected communities*," * and Metchnikoff et al. (1911) described the disastrous effects on Kalmuk students brought from remote parts of Russia to St. Petersburg and Moscow. The appalling morbidity among Senegalese troops in the 1914–18 war is also well known.

It is, of course, migration of the susceptible which matters; city dwellers moving to another city, even in another country, run relatively little risk. Thus Cobbett (1925) found that in New York in 1885–90 the tuberculosis death-rate per 100,000 for the Russians, who were mostly Jewish immigrants of urban origin, was 77; for the Irish, nearly all of rural origin, it was 646. Dublin (1923) cited similar figures, including rates for Pennsylvania. Cobbett asks:

> "What is the actual factor in urban life in the slums of a city which causes the enormous increase in the tuberculosis mortality of a people used to rural conditions? The Irish are not unused to poverty and hardship at home. It is not the hardship and poverty which they find in New York and Pennsylvania which causes them to die of pulmonary tuberculosis in such much larger numbers than they do at home but the fact that life in the congested districts of great cities brings them into contact with tubercle bacilli in such numbers as they have never met with before. The Jew, on the other hand, supports this very well, because he is a city dweller to begin with, and his fathers have struggled for life in the teeming warrens and ghettoes of filthy cities, where tuberculosis has taken tribute from his race since the dawn of history. The country-bred Irish race has had no such drastic schooling."

Cobbett's conclusion is simple:

> "There can be little doubt that all the older civilisations of the world enjoy a measure of resistance in proportion to the extent that they are, and have been, dwellers in cities."

In other words, the level of resistance of a community is proportional to the amount of infection it has experienced. No racial factor need be indicted—even among Jews there are vast differences in resistance to tubercu-

* Our italics.

losis. The Yemenite Jews, for instance—an agricultural community—are particularly susceptible to tuberculosis and develop it in an acute form when they move to urban centres (Rakower 1953); other agricultural Jewish communities (e.g., in Czechoslovakia) show similar lack of resistance. High susceptibility to tuberculosis is a feature of any group whose acquaintance with tuberculosis is relatively recent. Among Negroes and many coloured peoples this is so obviously true that it is accepted with little question. It is a little less apparent that there is also considerable variation of resistance against tuberculosis among white peoples, and that it is probably related to the same basic factor—the degree of exposure experienced by preceding generations and the actual epidemiological phase in the tuberculosis cycle reached by the community concerned.

The facets of this problem are, of course, multiple. There is the question of the high level of tuberculin positivity in rural England (Medical Research Council 1952) and of the bovine organism exerting a modifying influence on human-type infection, as it probably has in Great Britain, though at grievous cost to life and limb. There are the many factors responsible for the continued high level of incidence of tuberculosis in urban communities, including the increasing proportion of tuberculin-negative reactors growing up within city boundaries who receive their first infection in adolescence or later. We have also to consider migration in the reverse direction—of the infected or (more important) infectious from the cities of the Old World overseas, the impact of whose arrival on native peoples has been described by Cummins (1939). Our main purpose here, however, is to emphasise once more the importance of migration of the susceptible country-dweller to the city as a fundamental factor in the epidemiology of tuberculosis.

Tubercle (1953) asks why the tuberculosis mortality for 1951 should be considerably higher in some British cities than others—Leeds, Bristol, and Birmingham 36, 37, and 38 per 100,000 respectively, but Manchester 51, Liverpool 57, and Glasgow 72·7. No doubt there is more than one factor, but we know that immigration from Ireland into these western ports has for a long time been relatively high, being supplemented in the case of Glasgow by an inflow from the Highlands and Islands as well as other parts of rural Scotland. Bristol, though also a port on the west coast, is not a target for the immigrant in quite the same way. Unhappy experience has shown—e.g., in nurses—that it is the tuberculin-negative group exposed to massive infection which is particularly liable to develop tuberculosis. This is the weak point in our defences where the invader pours through unmolested, and our western ports seem to provide much grist for the tuberculous mill. Further, as Simmonds (1953) puts it, "the terminal stations of railways are in effect also ports of London." The introduction of a group of individuals possessing a relatively low level of natural resistance and a high proportion of negative reactors into the lower social levels of an urban environment, where they are almost certain to meet with repeated and possibly heavy infection, must clearly lead to the emergence of a proportionate quota of new cases of tuberculosis which, in turn, may infect others of the resident stock. Since it is a perennial process, happening the world over, it seems difficult to escape the conclusion that here may lie one of the chief means by which tuberculosis perpetuates itself as a social disease. The young Irish girl arriving in Islington, finding a job as a waitress, and living in a single room, earning more money but probably eating less well than she did on the farm at home; her brother, physically robust but immunologically fallible, entering a slum in the heart of Glasgow, where tubercle bacilli lurk in greater concentration than almost anywhere else in Britain; the young Scot he might meet there, from Highland or Hebridean croft, in little better case than himself as regards natural resistance; the cousin who emigrates to New York or Chicago; the other cousin who, though not leaving Ireland, goes to Dublin, Cork, or Belfast, only to meet the same hazards; the African student arriving in London; Indian peasant boys crowding into a hovel in Calcutta or Bombay, or Egyptian fellaheen into Cairo or Alexandria—all these examples suggest the same basic pattern of conditions: low degree of inherited resistance, high degree of tuberculin-negativity, susceptible age-group, poor standard of living—providing a distressingly suitable human culture medium for the waiting bacillus.

In making this investigation we have not overlooked the fact that national rivalries and emotional prejudgment of issues are apt to be aroused all too easily. We have been told: "They bring it over with them; you will find whole families over in Ireland who are rotten with it." A tuberculosis officer said with obvious sincerity, "It's the Irish who are our biggest problem; if it weren't for them, things would be much easier." On the other hand, we came across, time and again, among Irish patients the bewildered and pathetic plea: "How did I get it, doctor? None of my family ever had it. I was always perfectly well *until I came to England*." It was their genuine and sincere conviction that England was responsible for giving them tuberculosis. Both sides of the argument seem logical enough to those who put them forward, and there is much to be said in extenuation of both points of view; but clearly an objective approach must be adopted if the truth is to be discovered. The facts that we have collected are objective data, but the interpretations we have made may not be correct, and some are necessarily speculative; more evidence and much hard thinking are still required. At this stage, however, there may exist an opportunity to put to the test a possibly effective measure of preventive medicine. If our experience with B.C.G. vaccination of nurses and other staff at Clare Hall Hospital is at all typical (we have had no tuberculous lesions whatever in over 100 vaccinated since B.C.G. was introduced in May, 1949), the vaccination of tuberculin-negative Irish immigrants *before they leave home* should be a matter for serious consideration. Much work has already been done in Ireland in tuberculin-testing and B.C.G. vaccination, and the number of vaccinated is increasing rapidly. It is to be hoped that the effects of this will be reflected in an improved resistance towards tuberculosis among young Irish men and women, including those who emigrate. In addition to vaccination before the immigrants leave Ireland, a follow-up would be desirable in this country to detect reverters, to revaccinate where necessary, and to control the health of immigrants by routine radiography. Effort, organisation, and coöperation would be required from authorities on both sides of the Irish Sea, but there is the prospect of a considerable alleviation of human suffering and misery, and probably of a considerable reduction in public-health expenditure, for tuberculosis is a costly disease.

The toll of life and wealth exacted by tuberculosis during the Industrial Revolution in this country alone must be staggering; at great cost some considerable resistance towards tuberculosis has been achieved, but the "drift to the towns" is still going on—from rural Ireland, from the hills of Wales and the Highlands and Islands of Scotland, and from overseas. The question now is whether it is desirable to continue, year after year, risking exposure of susceptible immigrants to *uncontrolled* tuberculous infection. B.C.G. vaccination, although it presumably does nothing to raise natural resistance, should afford considerable protection to the young tuberculin-negative Irish girl immigrant in particular, and should diminish the incidence of pleural effusion and progressive primary lesions, so many of which lead to cavitation and frank phthisis. We are less

certain about its protective effect in the male in whom breakdown appears often much later in life and perhaps for different reasons, but this is a matter for elucidation in practice. Much other valuable clinical and epidemiological information about tuberculosis could be obtained simply by intelligent and vigorous application of the tuberculin test.

What happens to the descendants of suceptible immigrants is another problem requiring investigation. Clarke (1952) points out:

"There is no published evidence that the Irish of the second or third generation in the United States or in England are more susceptible to tuberculosis than their neighbours. Apparently the same conclusions apply to Scandinavians who become acclimatised in the United States."

The question of hereditary susceptibility on a racial basis seems to have little to support it. On a familial basis, however, there must be some transmissible factor which influences the resistance of succeeding generations. The available evidence seems to indicate that a high proportion of susceptibles is eliminated in the first or second generation, with a consequent considerable rise in the average level of resistance of the survivors and their descendants. This factor, supplemented by the improved standard of living attained by the newer generation and perhaps also by the effects of intermarriage with the native population, seems to bring about a fairly rapid approximation of resistance level to that of the resident stock. The possible influence of artificial immunisation on the development of this process might be further investigated.

Summary and Conclusions

The case-histories and radiographs of 292 patients with pulmonary tuberculosis in five hospitals in the North West Metropolitan Region were examined and the patients interviewed. 104 were born in Ireland and 129 in Greater London of London-born parents; a smaller subgroup of 59 patients born in Britain but with Irish parents or grandparents was also investigated.

1 patient in every 9 in the five hospitals proved to be of Irish birth and 1 in every 7 a Londoner in the manner defined. On the basis of the relative numbers in the general population the ratio of Irish patients to Londoners is at least three times that expected.

Most of the Irish patients of either sex were aged 15–25 at the time of emigration and were of rural birth and upbringing. A family history of tuberculosis was only half as common as in the London group, but the contacts of the London patients had usually been radiographed. The chances of infection outside the home are nevertheless considered to be greater in the Irish group.

The occupations of the Irish in London showed a higher proportion of manual and unskilled workers than of the Londoners, and suggested a lower standard of living. Most of the Irish patients were admitted from addresses, often lodgings, in the older and more central part of London.

70% of the Irish females were diagnosed within five years of arrival in England, but 60% of the males were in the country five years or more before being diagnosed. More Irish males than females were aged more than 30, and the sex difference was more pronounced than in the London group.

In both sexes onset with pleural effusion was commoner in the Irish group; severe primary lesions progressing to frank phthisis were found in most of the young Irish females. The severity of these lesions and the rate of breakdown are considered to be greater than in London females of the same age-group. Evidence of progressive primary lesions was less commonly found in the Irish males, in whom breakdown occurred more often later in life and with the bilateral hæmatogenous type of pulmonary disease.

In the Irish patients of either sex the disease appeared to take a more progressive and malignant course than in the Londoners.

Patients of Irish descent born in Britain had a family history of tuberculosis more commonly than either the Irish or the London-born. Their occupations and economic circumstances resembled that of the London group rather than the Irish; the type of disease and their reaction to it also indicated a closer affinity with the Londoner.

Irish immigrants probably contain a high proportion of susceptibles; this is related to the epidemiological phase of development reached by tuberculosis in Ireland and is not due to an inborn racial defect.

From a third to a half of Irish immigrants aged 15–25 from rural areas are estimated to be non-reactors to tuberculin. It is suspected that most of the Irish patients, especially females, who later develop tuberculosis are recruited from this group. A smaller proportion break down as a result of progression or recrudescence of infections received before leaving home.

Migration of the immunologically ill-equipped descendant of rural stock, often in the tuberculin-negative state and in the susceptible 15–25 age-group, to the great centres of population, where the risks of heavy infection are greater and the strain imposed by living conditions is much intensified, is considered to be one of the chief means whereby tuberculosis perpetuates itself as a social disease. This process is probably world-wide.

B.C.G. vaccination of Irish immigrants before leaving Ireland, with provision of a follow-up scheme in Britain, should be considered. Routine B.C.G. vaccination of tuberculin-negative school-leavers may be the best ultimate solution: and probably it should be undertaken in the Scottish Highlands and Islands and in rural Wales earlier than in other parts of Britain.

This suggestion does not imply any relaxation in other measures at present being applied to combat or prevent tuberculosis. It is in no sense a substitute for good nutrition, improved housing, or adequate treatment of the infectious patient. It should, however, buttress an epidemiological front hitherto unprotected.

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Production and Supply of Milk in Scotland

Changes in the law governing the production and supply of milk in Scotland will come into force on Oct. 1. Bottling of pasteurised milk will have to be done on the premises where pasteurising takes place, so that it cannot be handled after it has been pasteurised. The special designation "standard," which covers only a very small proportion of the milk sold at the moment, will not be recognised after Sept. 30. The Government announced as long ago as 1949 that this special designation would have outlived its usefulness by 1954 and should be abolished: plentiful supplies of better milk are available. In "specified areas," which include all cities and large burghs and many small burghs, the sale by retail of "standard" milk will be forbidden. The only grades of milk allowed to be sold in these areas will be "certified," "tuberculin-tested," "pasteurised," and "sterilised." In all other areas dairy farmers who, by Oct. 1, have not raised the quality of their herd from "standard" to "tuberculin-tested" will not be paid a quality premium on the milk they sell. A producer's licence to use the special designations "certified" or "tuberculin-tested" will, from Oct. 1, be granted only if the herd from which the milk comes is attested or is in a tuberculosis eradication area of the Ministry of Agriculture and Fisheries. The effect of this is that "certified" and "tuberculin-tested" milk will in future come from farms where all the cattle, and not only the milk cattle, are certified to be free from bovine tuberculosis.

The Handicapped at School

Exhibitions are rarely exciting, but the exhibition of the work of the London schools for handicapped children that was open for five days last week at County Hall in London was an exception.

It is fifty years since the London County Council took over the functions of the old school boards, and it is perhaps significant that these special schools were chosen to put on this exhibition. What was particularly interesting was not so much the examples of art and craft work that each type of school produced, though the standard of all—physically handicapped, deaf, and educationally subnormal—was consistently high, but the glimpses that were given of the actual school life of these children. The organisers of the exhibition grasped the nettle and arranged for demonstrations of class work from the different schools, so that those who went could see a class of blind children learning braille, a nursery class of the deaf, groups of physically handicapped children weaving, physical education for the educationally retarded, and maladjusted children painting. The department of physical medicine at King's College Hospital showed the daily treatments given in a nearby school, and the public thronged to see the patient attention of these children severely handicapped by poliomyelitis, cerebral palsy, or tuberculosis.

In addition to samples of their ordinary activity the schools produced set pieces—plays, puppet shows, and dancing. At the opening a school for the blind sent its choir and recorders, and some educationally subnormal children from a primary school put on two dances; and to close the exhibition some physically handicapped children presented *The Geisha*. In between, the variety was bewildering; but it was the consistently uninhibited behaviour of these children that was so encouraging. There were some large statistics, and the most impressive was the high proportion of these children who were found and kept successfully in employment.

Of recent years there has been a great deal of talk of the need to keep these children in ordinary schools so that they are not separated from the community. This exhibition is reassuring in that it shows the high standard of the work in London and the interest of the public in these children and the problems that they pose. It may be easier to find a solution of the problem of educating handicapped children in a big town than in a rural area, but there can be no doubt of the success with which the Education Committee and the Education Department of the London County Council have been working these fifty years.

In England Now

A Running Commentary by Peripatetic Correspondents

WE were told the other day that one of our colleagues had recently become solely seised in fee simple in possession of a messuage or dwelling-house situate in a piece or parcel of land except and reserved and subject if and so far as mentioned in the First Schedule attached hereto but otherwise free from incumbrances. We are always glad to hear of anybody getting on in life, and we determined to pay him a visit. We found our colleague—hereinafter described as the Mortgagor—precariously established with his family in a bridge-head in the dining-room, the rest of the house being given over to the activities of carpenters, plumbers, carpet-fitters, plasterers, and electricians. The Mortgagor's nerves were in poor shape, and as one of the floor-boards in the stair succumbed to the electricians with a tearing crash he winced visibly. Between the blows of a sledge-hammer demolishing a party-wall somewhere in the background he confided to us that he had wakened up sweating at 2 A.M. for three nights running in the firm apprehension that the dry rot in the kitchen had spread to the bedroom floor and that the bed was in imminent danger of making a sudden descent into the living-room. That morning a hamster belonging to the Mortgagor's dependants had escaped from its cage and had eaten a large hole in the new haircord carpet in an attempt to undermine the foundations, and only a few moments ago the Mortgagor had had words with the carpet-fitter, who was now sullenly engaged in sawing a totally unnecessary inch off the bottom of a bedroom door in order to create a draught. Here the Mortgagor's wife produced a cup of tea made with the aid of the painters' blowtorch, and the Mortgagor sipped it moodily. It appeared that there was a peculiar smell in the bedroom, which nobody but the Mortgagor and the Mortgagor's wife could smell, and indeed when we were invited to smell it later we too aligned ourselves with the multitude. There were three dead sparrows in the cold-water tank, and a hornets' nest in the chimney. The curtains belonging to the Mortgagor's wife fitted nowhere, and there was a loose board in the dining-room on which the Mortgagor's small daughter was wont to jump up and down, shattering valuable china and completely demoralising the grandfather clock. The Mortgagor stared morosely out of the window at the Timber he had undertaken to preserve; there was a sickly lilac bush close to the house, and we could see it worried him. We inquired with diffidence if there was not perhaps a bright side to the strain of owning a Gentleman's Country Residence, and after some hesitation the Mortgagor admitted that at last he had acquired the style he wanted to write a book on operative surgery. He showed us a specimen page dealing with appendicectomy, which read as follows:

1. Pull and draw opening in lower part of right-hand abdominal wall.
2. Remove and credit appendix.
3. Generally make out with new finishings internally, all to match existing.
4. Reconstruct abdominal wall to detail.
5. Make good surrounds and leave all perfect.

* * *

I happened to stroll into the casualty theatre the other afternoon and found a miner having his hand stitched up. I recognised him as an old fractured tibia and passed the time of day with him. As I was about to leave, he spoke again: "If you were going to inquire after my leg, Sir, its going on all right. I go for another Board on Monday, and I can't 'ardly walk, but as far as you're concerned, Sir, it's a marvellous job and I can't thank you enough."

Very polite, but it does make our rehabilitation figures a bit hard to assess, doesn't it?

* * *

The pretty little Landrace pig which arrived over here from Scandinavia not so long ago, as the herald of State Visits and Eurovision, now seems to be taking the gilt off the gingerbread for the swineherds of England. She carried more than a litter of piglets beneath her tabard;

she also brought us atrophic rhinitis—"twisted snout" to the farmer. Nowadays it is well to avoid any further strain on goodwill, but we must confess that there are æsthetic considerations of global importance concealed in the snout of a sow.

Will the rich musical timbre of the porcine grunt give way to the hollow moan of the wind in the willows as the fruity overtones are muted by shrinking turbinates? Will the sighing whisper of the sea-shell be the only echo of full blown conchæ? Will *Homo sapiens* have to assume the standard for all snores? The ozæna of atrophic rhinitis threatens likewise to upset the balance of natural fragrance in the longitudinal axis of the pig, where up to now mere halitosis barely held its own. The by-law distance for keeping pigs near dwellings is rendered obsolescent. Woe to those who live to leeward. But it may be some consolation to the friends of dumb animals that ozæna carries its own merciful anosmia.

* * *

For the driest of dry-bobs a first visit to the Henley Royal Regatta was an entrancing experience. From a nice young man in a Merton blazer I learnt from which direction to expect the crews, but he was unable to explain why the all too narrow river should be split down the middle by booms so that there is barely room for two crews to race abreast. From him also I learnt that the Russians were a very sporting lot and when they went past comfortably ahead of Leander they seemed also to be able to row pretty well. The final of the Princess Elizabeth Cup with Winchester and Oundle going all out was a fine sight but the best spectacle of all was provided by the old rowing men in their little caps, smoking pipes and wisely carrying umbrellas, wearing "freezer" blazers and rather short, tight white bags with the pink socks of Leander peeping coyly beneath. These alone were well worth the money.

* * *

Many letters on the plight of senior registrars have lately appeared in the journals. Although they are clearly, and often brilliantly, written, the identity of most of the writers has been withheld. What is the reason for this reticence? Is it fear of being dubbed a "political agitator," or the knowledge that applications for consultant posts are already in the hands of selection boards? For my part, there is an even more urgent reason for anonymity—my bank manager reads *The Lancet*.

* * *

BALLADE DES LARMES DU TEMPS JADIS

The screen now moulds the form of N.H.S.,
Bronowski's coaxing smile makes Science pay
Respect unto the cathode tube's finesse.
So I must leave the sick and go and pray
That Science in the Making will not lay
My techniques bare nor prove me in the wrong.
My cherished superstitions swept away,
I weep, for Life is short and Art is long.

As Bradley's solemn mien and grande sagesse
Reviews I.P.'s effect on human clay,
Jeanne Heal unmasks the courage of jeunesse
To live again, to love, to laugh, to play.
While on the phone I hear a caller say
Will I go round at once, she is not strong
Enough to go and do her work today.
I weep, for Life is short and Art is long.

By Jupiter's moons, not Snellen tests assess
My patient's vision; down the Milky Way
I rolling tongues with spatula caress.
I'm quizzed about the locks with streaks so gay,
And twinning lore, or hands and feet that stray
From left to right, but cannot yet belong
To ambidextrous skill. O, Cosmic Ray!
I weep, for Life is short and Art is long.

ENVOI

PRINCE, Slow the pace! I sigh for yesterday.
I can't keep up. The burthen of my song
Lies hard on failing heart and hairs of grey.
I weep, for Life is short and Art is long.

Letters to the Editor

NEGLIGENCE

SIR,—I have read with much interest the article by Prof. Leslie Banks and Dr. Hislop in your issue of June 26. To reply to the excellent exposition of these learned authors may savour somewhat of the fool who rushes in; none the less, I feel justified in doing so, for I have had nearly twenty-five years' experience of medical litigation.

With the main theme, I am in full accord, but I differ from some of the remedies which they propose. Broadly speaking, the remedies they suggest are:

(*a*) Withdrawal of medical negligence cases to a special tribunal;
(*b*) Appointment of medical assessors;
(*c*) Restriction in the number of expert witnesses; and
(*d*) Restriction in publication of details.

Dealing with these proposals in order:

Special tribunals.—I entirely deplore this suggestion. Sufficient has been written in recent years to point to the unreliability and possible vicious decisions of the many domestic and administrative tribunals that have beset the modern Act of Parliament to require no further emphasis at this date. The National Health Service Act is itself by no means an exception to this trend. It would surely add to the difficulties of medical defence if still a further ad-hoc tribunal were established to administer the common law—a tribunal which would not be bound by the rules of evidence and pleading so well tried by long experience. It is trite to say that not only must justice be done, but it must manifestly be seen to be done; and to deny a hearing in open court would be the very antithesis of that prime principle of law.

Medical assessors.—I also deprecate the adoption of a procedure analogous to that ruling in Merchant Shipping cases, which often, owing to the very complexity of the matters at issue, require that expert guidance be given to the court. It will be remembered that, under the now defunct Workmen's Compensation Acts, provision was made for a medical assessor to sit with and assist the judge, but rarely was advantage taken of this privilege. Further, to suggest a physical examination of the claimant by the medical assessor is dangerous in the extreme, unless the assessor is to be subject to examination as a witness by counsel for both parties, becoming, therefore, himself nothing more than an expert witness. In the final analysis, negligence is a question of fact, and it seems to me that the determination of whether or not negligence in any particular set of circumstances is or is not established is best left to the common sense of judge or jury, who can normally be trusted to exercise that function with reasonable discretion. Further, the appointment of medical assessors would inevitably lead to the trial of medical negligence cases by a judge alone, thereby automatically depriving a litigant of one of the cherished rights of trial by his peers.

Expert witnesses.—There is much to commend the suggestion that the number of expert witnesses be limited on each side, but provision is already made by the Rules of Court and under the Legal Aid and Advice Act for such limitation. My view is that, apart from saving in cost, a multiplicity of expert evidence tends only to confuse the issue in the minds of the judge or jury. A Scottish judge is reported to have said some years ago that in his experience, there were three kinds of witness: "the liar, the damned liar, and the expert witness." None the less, the assistance afforded to the court by experts obviously cannot be entirely elided, but their testimony must be subject to rigorous scrutiny by cross-examination.

Restriction in publication.—While I do not deny that there is some force in this argument, I do not consider that sufficient justification exists for this proposal. To bring a fault to light is the surest way to cure it. The practical approach surely is to request the press to afford equal publicity to both sides of the argument, or at least to refrain from publishing reports of part-heard cases,

and to give as much publicity to verdicts of "no negligence" as is given to awards of damages.

While much could be said about the impact of the Legal Aid and Advice Act as being one of the causes of the increase in medical litigation, I believe it to be the generally held opinion that it is proper that the courts of law should be open without fear or favour to all who seek to redress a grievance, though I do consider that the initial procedure in applying for legal-aid certificates could be considerably tightened to prevent vexatious litigation being embarked on.

The real remedy appears to me to lie in educating the medical profession more consciously and fully in their obligations towards those whom they undertake to treat and in insisting that time taken in proper diagnosis and consideration of treatment is never time wasted. Too many of the cases of negligence arise primarily either from lack of thought, or, what amounts to the same thing, pressure of work, or from insufficient experience. Cure these defects and many of the underlying causes of complaint will disappear. At the same time, the public, with the assistance of the legal profession, require to be educated on the degree of negligence which will reasonably found an action against a medical practitioner. Lord Justice Denning has within the last few days pointed out in no uncertain terms that mere mischance in treatment does not necessarily by itself found a claim in law.

WILLIAM MAIR
Solicitor to the Medical and Dental Defence Union of Scotland.
Glasgow, C.2.

BILLROTH-I GASTRIC RESECTION

SIR,—I was very interested in the paper by Dr. Schmitz and his colleagues (July 3), and particularly in that part of it which refers to the Haberer-Finney operation. I had thought that the latter operation implied the anastomosis of the whole width of the stomach to the side of the duodenum, but in a small number of cases I have used the procedure described and illustrated in their article, preparing the gastric remnant exactly as for a Billroth I, but joining it to the side of the extensively mobilised duodenum. For want of a better description, in the case-records I had called this a "Billroth I(A)." This procedure will certainly allow gastroduodenal anastomosis without tension even if the proximal duodenum is the seat of gross ulceration, and I have also used it for anastomotic ulceration following Polya gastrectomy.

My purpose in writing is to draw attention to a sequel of this operation which is embarrassing in the immediate postoperative period, but which may, in the long run, prove to be a virtue of the procedure. With the patient in Fowler's position, the stomach remnant after a Polya gastrectomy empties by gravity, and so, I think, it does after a Billroth I, because I have never seen undue gastric retention following this operation when the stoma has been of reasonable width. However, in all my few Billroth-I(A) operations there has been complete gastric retention for three to five days, in spite of a stoma which is wider and easier to fashion than that of the Billroth I.

I doubt if this is due to œdema, and I think it may be associated with the "end-to-side" anastomosis which allows the weight of a full stomach remnant to drag sideways on the duodenum and closes the lips of the stoma. In this way a natural "pylorus" is formed, which can only be overcome when full peristaltic power has returned. In one of my cases I was so alarmed when gastric retention persisted up to the fifth day, that an urgent barium meal was carried out. This showed the "obstruction" to be at the stoma, but it was at once relieved by turning the patient on his right side (a manœuvre which assists the emptying of the intact stomach). The patient concerned was nursed in this position for a couple of days and had no further trouble.

This tendency to gastric retention will no doubt militate against "dumping" due to precipitate emptying, but it is a rather disturbing feature of the first few postoperative days, during which the patient will require an indwelling nasal tube, continuous intravenous salines, and several blood-chemistry examinations. For this reason I have not employed the Billroth I(A) in cases of gastroduodenal hæmorrhage, where I feel that the patient already has enough burden to bear, nor in patients who are of an unduly nervous disposition. I think, too, that this passive retention, which can only be overcome by active peristalsis, would make the addition of vagotomy extremely unwise.

I should be very interested to know whether Dr. Schmitz and his co-workers, or others, have had the same experience with an otherwise excellent procedure.

May I, Sir, be permitted a postscript which has only a passing relevance? I have noticed that many writers who encourage ambulation on the first postoperative day after major abdominal operations, also recommend continuous parenteral fluid therapy "until the bowel sounds return." I have often wondered what the ambulant patient does with his drip. All sorts of fascinating possibilities come to mind, but I like to think that the ward-sister keeps the patient safely in bed until the next ward-round. Then everyone, including the patient, is happy.

Barnet General Hospital. V. J. DOWNIE.

THE PLIGHT OF SENIOR REGISTRARS

SIR,—It is very gratifying to senior registrars in the country to read that Professor Illingworth (July 3) affirms that consultants are by no means uninterested in the problem; and, as somebody who until three years ago was deeply interested in this difficulty, I would also like to say that I, too, have not lost interest in the problem since achieving consultant rank.

What, however, is perhaps not fully realised is that the crescendo of feeling at present made manifest by correspondence in the medical journals is merely a repeat performance of the crisis that occurred at the time when the Ministry seemed to be about to give the "sack" to approximately 700 senior registrars. The arithmetic of the situation was made available to all at that time, and when Professor Illingworth says "that no-one knows the answer" and that "we lack the essential data" he is, I am afraid, forgetting all the discussions and facts produced during the last registrar crisis.

The figures then were (and I speak from memory) that the consultant establishment in England and Wales was between 2000 and 3000 short of what the Ministry regarded as adequate in their pamphlet on the subject. On the other hand, to absorb the registrars who had completed their full term of office, only about 350 vacancies were required after the senior registrar establishment had been permanently elevated to exceed 900.

Provisionally, then, only a small fraction of the increase over the present consultant establishment is needed to absorb these fully trained senior registrars crying out for work. Whatever arguments may be raised against an increase in establishment on the grounds of inadequate hospital facilities, I cannot believe that there need be delay in creating the handful of posts necessary to absorb the senior registrars whose plight is so apparent.

I am sure that these registrars, who are at the moment more fully acquainted with the present figures than I, will also respond to Professor Illingworth's admirable lead by painting the present picture, but I am sure this does not differ very much from that which existed three years ago.

Let me repeat: only by a small but urgent increase of consultant establishment can the immediate problem of the senior registrars be solved. The remote problem is a

different one, which has already to some extent been tackled, by adjusting the ratio between the senior registrar and consultant establishment, and I do not wish to discuss it further here.

St. James's Hospital, Leeds, 9. T. F. REDMAN.

SIR,—In your issue of June 19 I quoted some figures for the number of applicants for the recently advertised obstetrics post in Bournemouth. The figure of "108 applicants of less than consultant status" I now know to be incorrect; in fact, there were 59 applications altogether and of these 6 were from consultants. This makes the state of affairs in obstetrics a good deal less depressing. I am glad to withdraw my original figures, and I must apologise for my discourtesy in giving details which I had failed to check at source. The problem, however, remains bad enough to merit the attention and action of the profession.

Professor Illingworth's letter (July 3) was very welcome. His comments are in accord with the representations that my group have made on many occasions. We also would welcome a statement of fact and figures from the Ministry of Health. The last time we tried to get details from the Ministry they were unable to help and we had to seek information from many different sources. The incomplete figures were published in a letter in your columns last year.[1]

Our present lack of information is paralleled by a faulty appreciation of the general position by the Ministry of Health. The parliamentary secretary recently stated: "At present the number of probable vacancies in 'career' posts appears to be fairly well balanced in relation to the intake, which, a little while ago, was a source of great concern."[2] This complacency is partly based on the belief that the agreed figure of 960 senior registrars[3] is reasonable. This cannot now be accepted.

In supporting Professor Illingworth's request for information, therefore, we would like a further inquiry to be made—on the amount of work of consultant nature now being undertaken by senior registrars. This I am sure would reveal a situation which would shock the collective consciences of the Royal colleges, the profession, and the public. It would remain to be determined what influences are at work in perpetuating this state of affairs.

St. Mary's Hospital for Women and Children, Manchester. R. M. FORRESTER
Chairman, Manchester Regional Registrars' Group.

TYPE-12 STREPTOCOCCI ASSOCIATED WITH NEPHRITIS

SIR,—The article by Dr. Wilmers and her colleagues (July 3) prompts me to refer to a dissertation which I wrote in 1938 on the relation of clinical manifestations to the type of infecting streptococcus. For the purposes of this dissertation I studied 100 unselected cases, admitted to the South Eastern Fever Hospital, in which the type of infecting streptococcus had been ascertained. 39 of the 100 cases yielded type-12 streptococcus, which was the predominant strain at the time.

The interesting point in regard to the recent article is that the type-12 infections included the only 3 cases with albuminuria. In these 3 cases the albuminuria was temporary and they were not classified as suffering from nephritis. At the same time, it does seem to add to the evidence concerning the tendency of this type of streptococcus to affect the kidney, particularly as, in my series, the approach was from clinically unselected cases and included types 1, 2, 3, 4, 5, 6, 8, 11, 12, and 13. Apart from type 12, none of the other infections produced albuminuria.

Waddon Hospital, Croydon. J. J. LINEHAN.

1. Forrester, R. M., Walton, J. N. *Lancet*, 1953, i, 793.
2. *Hansard*, May 21, 1954, col. 872.
3. See *Brit. med. J.* 1951, ii, suppl. p. 47.

MERIT AWARDS

SIR,—When the system of merit awards began, we early felt that we could not hope for any measure of accuracy in the distribution of these awards without a drastic decentralisation of the machinery for gathering information. We realised that we could only succeed by getting into direct contact with local opinion. For this purpose, Sir Horace Hamilton, the vice-chairman of the Awards Committee, and I set aside three months of the year in order to visit each region. No one procedure has been found which meets every circumstance. For instance, in the Birmingham region this year, apart from the teaching hospital, meetings were arranged at Stoke, Wolverhampton, Coventry, and at the two Birmingham hospitals, Dudley Road and Selly Oak. In the Bristol region we went to Truro, Exeter, Plymouth, Bath, and Bristol. On the other hand, at Newcastle we could always be sure that between 200 and 250 specialists, gathered from the whole region, would come to an evening meeting, year after year. At these meetings we invite questions, and generally speaking full advantage is taken of the opportunity of frank discussion—at Newcastle, for example, the debate lasted more than two hours. In short, sometimes we go to various parts of the region, sometimes they come to us. In London, the three Royal Colleges give the committee most valuable and detailed help, paying particular attention to the claims of specialists not attached to teaching hospitals. Further information comes from one or more advisers in each specialty, while each of the four Metropolitan regions is divided up into sixteen or eighteen areas, with advisers in each area.

These meetings over the whole country, to which all specialists in the area concerned are invited, are invaluable to us as a means of meeting consultants and learning their views, often outspoken; but a large gathering plainly could not be expected to bring forward recommendations to fill vacancies in the list of awards. So in the first instance the meetings were asked to elect small subcommittees to advise us—precisely the machinery suggested now by the council of the Regional Hospitals' Consultants and Specialists Association in their letter in your issue of June 19. But experience (three years' trial and error) has shown that a committee is not always the ideal method of eliciting the particular information we require. In this connection I recall that at the outset some of the London teaching hospitals, in response to our request for recommendations, decided of their own accord to entrust the task to two or three of their staff, who were instructed to report direct to the Awards Committee, and not to the parent medical committee which had appointed them. There was a feeling that it was not fair to ask those who had been given this difficult task to submit their conclusions, which were obviously of a confidential nature, in open committee, to perhaps as many as thirty members. For they were not merely asked to submit a list of names to fill vacancies; it was necessary to supply the Awards Committee with the reasons which had led to the choice of those names. And it was found that many consultants were not prepared to furnish these reasons save to the Awards Committee, where they could feel assured that the confidential nature of their report would be respected. In many instances we learnt that areas outside the teaching hospitals came quite independently to the same conclusion, and preferred to entrust the task to one or two senior consultants who enjoyed the confidence of specialists in those parts. Nevertheless, when this view is not accepted, where in brief a meeting of specialists would prefer to entrust this task to a small committee, the Awards Committee will always welcome whatever advice they may give. For the master principle that has guided us from the beginning in our selection for awards has been to gather advice concerning any individual

from as many sources as possible. So only can we hope to eliminate prejudice and to attain to some degree of accurate appraisement. And here let me express the gratitude of the Awards Committee to the very large number of specialists who by their detachment and good sense have made the successful working of this method of remuneration possible.

I have spoken of the successful working of the awards system. Am I entitled to make any such claim? The letter in your issue of June 19, signed by Mr. John Simons on behalf of the Association which he represents (which is not to be confused with the Central Consultants and Specialists Committee of the British Medical Association), has not been followed up; so it is perhaps necessary to remind your readers that he would flatly deny my claim. What then is the truth? There are more than 6000 specialists in England and Wales. Of these a majority have not been given a merit award, and it is perhaps inevitable that there are some who are not satisfied with the committee's selection. It would probably be possible, with a little organisation, to whip up a number of letters in support of Mr. Simons's assertion. That there is "considerable disquiet" is, however, diametrically opposed to our experience.

On our recent tour of the country the meetings were very large; the attendance was often twice what it had been in previous years, and there appeared to be a very generous appreciation of the time and trouble that the committee gave to the task in hand and of the success that had attended its attempt to overcome the more obvious difficulties inherent in such a system. There are a number of bodies representing specialists, and if the Awards Committee have not made full use of this particular association, it is never too late to amend our ways.

In England, when we do anything remarkable it is our custom to hasten to deny that it is anything out of the way. The body of specialists in England and Wales have taken this system of merit awards and by their individual help and advice have made it work. It is indeed a remarkable achievement, which has its roots in the good sense of our people, an achievement, I think, beyond the reach of more selfish countries.

London, W.1. MORAN.

ORAL TREATMENT OF PERNICIOUS ANÆMIA

SIR,—I was much interested in the article by Dr. Lowther and his colleagues in your issue of March 6, for I had then been treating 4 established cases with 'Bifacton' for over three months. Now after more than seven months on the tablets alone, my experience is the same as theirs.

Some details of my cases are given in the accompanying table. It is noted that 3 patients have had neurological symptoms, and these recurred from time to time in the older men

Case	Age	Diagnosed	Previous treatment	Neurological symptoms
1	57	Sept. 22, 1949	'Anahæmin'	Absent
2	57	April 7, 1949	'Neohepatex'	Slight
3	70	Sept. 4, 1942	'Cytamen 100'	Present
4	74	June 5, 1944	'Anahæmin'	Present

despite treatment controlled with periodic blood examinations. Now all are free except case 3, whose symptoms returned for a short time when dosage was reduced to one tablet a day, but have since disappeared on two tablets daily.

All 4 have kept in excellent health on bifacton only, except case 2, who had a month on 'Fersolate' tablets as well. Blood pictures show normal films and the Hb is 100% or above. Dosage was begun at two tablets daily, reduced to one after three months, except case 3 as I have mentioned. The 2 younger patients are at work and say they feel better than they did on injections, while the older 2 say they are as well as before; and all prefer the tablets.

Although it is still too early to be certain, it seems that bifacton by mouth is just as effective in controlling an established case of pernicious anæmia as any of the various injections. It would be very interesting to see how a newly diagnosed case would respond, and I have been on the look-out for one in my practice—so far, without success. One must also consider the questions of cost and convenience; bifacton is more expensive than any of the injections and many patients might prefer a weekly or fortnightly injection to a daily tablet.

The blood examinations were performed by Dr. A. L. Taylor and his assistants in the laboratory of the Bristol General Hospital, and to them my thanks are due.

Bristol, 4. JOSEPH SLUGLETT.

SERUM HEPATITIS

SIR,—The last paragraph of your leading article of June 26 states that "one can feel relatively safe in Great Britain when administering fresh whole blood, or plasma prepared from pools of 8–10 donations." To avoid any possible misconceptions regarding the icterogenicity of fresh as compared with stored blood, I would like to point out that the blood used in the trials, on the results of which the above statement is based, was from a few days to 3 weeks old when transfused.

Lister Institute of Preventive Medicine, Elstree, Herts. W. D'A. MAYCOCK.

SALARIES IN THE PUBLIC-HEALTH SERVICE

SIR,—As one of the forgotten men (and some women) I am writing to draw your attention to the salary position of medical officers of health.

I hardly need to remind you that we unfortunates are the only doctors who must hold two statutory qualifications. This we do not quarrel with, but it should surely be reflected in the salaries paid. These may be adequate for county medical officers and the medical officers of health of the big county boroughs, but for those of the smaller county boroughs, and in particular for those medical officers of health holding what are termed mixed appointments, the salaries paid are in no way commensurate with the responsibility.

In my own case, after seventeen years as an M.O.H., my salary (the maximum on the present complicated formula) is less than £1700—i.e., only £400 more than an assistant medical officer's and only £300 more than that of an assistant dental surgeon under the recent award. This example can be multiplied many times as many of my colleagues are in the same boat.

Unless there is a very substantial revision upward I should strongly advise any potential recruits to medicine to choose some other branch.

You, Sir, have not been particularly vocal in championing the case for adequate salaries in the public-health service, but I am sure we can ask for fair play.

W. K. DUNSCOMBE
Penzance. Medical officer of health.

SIR,—I think most doctors would agree that the maximum salary for the assistant medical officer in the public-health service compares unfavourably with that of his colleagues in any other branch of medicine.

Most of us are now fairly senior; we entered the service with the D.P.H. qualification and all-round postgraduate hospital experience; and we do work similar to that of an S.H.M.O., yet we do not get the same pay as the S.H.M.O. There are higher-paid appointments as M.O.H., deputy M.O.H., senior medical officer, and divisional medical officer; but these appointments are, in the main, administrative, and there are not enough vacancies for all. Meanwhile, the maximum salary for an assistant medical officer remains £1300. Until this is remedied I cannot see how the public-health service can attract many recruits. I am convinced that if the maximum

salary is not raised to the same level as that in the hospital service we shall see the decline of public-health work. I regard the salary scale as quite inadequate.

D.P.H.

DOES IRON SMELL?

SIR,—As I am extremely interested in the development of ferrotherapy, I read with particular interest the illuminating article by Dr. Wilmers and Mr. Heriot in your issue of July 10. But I am much intrigued by the report, in case 2, that the stomach contents "smelled strongly of ferrous sulphate," and also by the comment, "passed a soft black stool which smelled of iron."

Surely this is not strictly in accordance with the facts. I have before me a wide range of iron-containing preparations, including 'Analar' ferrous sulphate. This material I submitted to personal olfactory tests, and I also asked 6 assorted observers, who happened to be immediately available, to report on the smell of a container containing ferrous sulphate. All were agreed that no smell was observable.

I experimented, with the same observers, with a range of ferrous salts, including ferrous carbonate (impure admittedly), ferrous succinate (pure), ferrous chloride (impure), ferric chloride solution, ferric nitrate, and also with pure iron powder. In our opinion, none of these exhibited any smell whatever.

It must be admitted that solutions of iron salts possess a characteristic inky or metallic taste, but, in the interests of accuracy, I feel I must protest against a scientific report which includes a statement that ferrous sulphate has a distinctive smell.

London, W.1. DAVID HALER.

SHADOW OVER THE BARBITURATES

SIR,—Your leading article last week and the paper by Dr. Hunter and Dr. Greenberg draw attention to the problem of addiction to barbiturates.

Among the possible methods of dealing with this, a restraint in prescribing hypnotics in general certainly appears to be preferable to the alternative method of replacing the barbiturates by older or newer hypnotics. While there may still be "a large place for chloral and paraldehyde as sedatives," the risk of addiction is present even with paraldehyde, considered to be "the safest of hypnotics,"[1] though the risk is much less than with barbiturates. You point out that "addiction [to barbiturates] is liable to develop only in . . . psychologically abnormal people;" but if unstable people were introduced to paraldehyde they might also become victims of this much rarer type of addiction, in spite of its unpleasant taste. This appears to be definitely the case with psychopaths and alcoholics. During the last year we have seen several such cases among our patients; they had either got their paraldehyde without a prescription at a chemist's, or had paid exorbitant prices at private "unofficial" sources. Alcoholics put on paraldehyde after withdrawal of alcohol frequently develop a liking for paraldehyde very rapidly, stressing the fact that it seems to do for them exactly what alcohol had done for them previously. Fleming[2] refers to a paper describing 40 cases of paraldehyde addiction among alcoholics.

In the case of a new hypnotic, it takes time to find out whether it is habit-forming or addiction-producing. As far as methylpentynol is concerned, May and Ebaugh[3] state that "if it is used as a hypnotic only, addiction will not occur; if used as a sedative there is a definite possibility that patients may develop addiction, although this may be less likely than with other sedative-hypnotic drugs." Among approximately 100 patients (chiefly alcoholics, with a smaller number of neurotics), we have so far found no evidence that methylpentynol leads to craving, increase in tolerance, or psychological or physical dependence. It is interesting to note that 5 chronic alcoholics, who had also taken large doses of barbiturates and paraldehyde before admission, stated that with methylpentynol they missed the "kick" or "lift" which they obtained from those two other drugs, and that they could not visualise becoming addicted to it. But one has to keep an open mind regarding this question. In view of the fact that this drug has recently received some publicity in the daily press and can be bought without prescription, it may be useful to remember that although methylpentynol has generally been found to be non-toxic, a case of fatal poisoning due to a suicidal overdose of from 18 to 24 capsules has lately been reported from America.[4]

Cases of multiple drug-addiction similar to the one mentioned by Dr. Hunter and Dr. Greenberg were frequent among our alcoholic patients. Over 25% of 100 alcoholics admitted taking excessive doses of other drugs, chiefly barbiturates, often combined with the use of amphetamines in the morning.

The World Health Organisation's expert committee on drugs liable to produce addiction, which already, in 1952,[5] considered the barbiturates "drugs liable to produce addiction," now recommends that amphetamines should be submitted to the same restrictions as barbiturates.[6] Your recommendation of restraint in the prescription of barbiturates and your warning of the "risks in repeatedly handing out barbiturates to a neurotic patient" appear to be almost equally justified in the case of these other drugs mentioned, which are sometimes taken by unstable personalities for similar purposes as the barbiturates, though the problem may be less urgent both as far as the numbers of people affected and the risk of consequences is concerned.

Warlingham, Surrey. M. M. GLATT.

SIR,—Your leading article in last week's issue is very welcome. For years I have been warning against their dangers. In *The Medical Review*, which I edit, I have time and again written against their continued prescription by doctors. In a textbook intended for students, they are actually stated not to cause addiction. That they do is, of course, undeniable. I know of 3 or 4 persons who take barbiturates regularly every night and cannot give up this pernicious and withal dangerous habit. They must, of course, be obtaining regular prescriptions for phenobarbitone from their medical attendants. They have, unwittingly, become "phenobarbitonists," just like the morphinist of old.

Insomnia, like all abnormal conditions, must always have a cause, but many doctors today have no time to discover it, so the easiest way out is to prescribe phenobarbitone—which is not a cure. I have seen some very severe attacks of dermatitis which were produced by phenobarbitone and which took weeks to cure. Apart from fatal cases, the result of suicide or the taking of an overdose, it is not at all unlikely that phenobarbitone produces other far-reaching effects on those who habitually resort to its use for insomnia. But why prescribe it at all when there are infinitely safer, if older, remedies, such as methylsulphonal, paraldehyde, and so on?

Of course, phenobarbitone is not the only drug that is being indiscriminately prescribed by the modern doctor: there are others, such as cortisone, aspirin, and penicillin, to name but a few examples. When will doctors cease to be the slaves of the experimental laboratory and when

1. Morgan, T. N. *Practitioner*, 1953, **171**, 196.
2. Fleming, R. *In* Alcohol, Science and Society. New Haven, 1945; p. 392.
3. May, P. R., Ebaugh, F. G. *Amer. J. Psychiat.* 1953, **109**, 881.
4. Cares, R. M. *Amer. J. clin. Path.* 1953, **23**, 129.
5. Third Report of W.H.O. Expert Committee on drugs liable to produce addiction. Geneva, 1952.
6. Fourth Report of W.H.O. Expert Committee on drugs liable to produce addiction. Geneva, 1954.

will practical clinical research replace that of the mere animal experimentalist who, too often, has never written a prescription, much less diagnosed an illness or treated a patient?

Edinburgh. JAMES BURNET.

NEUROLOGICAL COMPLICATIONS OF BRONCHIAL CARCINOMA

SIR,—Your interesting leading article prompts me to report a case which may be of some general interest.

A man, aged 46, was admitted to this hospital in May, 1953, with a typical paranoid psychosis. He had been operated on in the previous year and there was reported to be a growth "invading the chest wall and irremovable." Although no histological proof of the neoplasm was obtained, it was considered by the surgeon to be a bronchial carcinoma. A few months later mental symptoms began, and when he was admitted here he was in a state of severe agitation with various delusions. He believed there was a conspiracy against him, that his tablets were being changed by the staff in order to poison him, and that people in the street were talking about him. At home he had shown some violence.

As previous investigations had shown no evidence of cerebral metastases, it was decided to give him a course of electroconvulsion therapy. His mental symptoms rapidly receded and his physical state also improved. He was discharged from hospital two months after admission and, shortly after, returned to work. He has been seen recently and is still maintaining his physical state and continuing at his work. There seems to have been no progress of his lung neoplasm.

It may be that the factors involved in the peripheral neuritis described in carcinoma of the lung may also operate to produce severe psychological disturbance. However, as histological proof of this lesion is lacking and his physical state has not deteriorated, it may possibly have been (despite the surgeon's opinion at operation) an inflammatory condition causing a simple toxic psychosis.

Cherry Knowle Hospital,
nr. Sunderland. A. GILLIS.

SIR,—In last week's leading article you suggest that your correspondents should give examples of the links between cancer and other metabolic processes. In dermatology we have dermatomyositis, which may be associated with carcinoma, and acanthosis nigricans, which, when it first arises in middle age or after, is almost always a sign of carcinoma; and there are others. Forman[1] has recently discussed the subject.

London, S.W.2. MICHAEL FEIWEL.

SPONTANEOUS RUPTURE OF SPLEEN IN INFECTIOUS MONONUCLEOSIS

SIR,—Spontaneous rupture of the spleen is not very common, even in countries where malaria and kala-azar are prevalent. In temperate climates it has been reported in chronic lymphatic leukæmia,[2] but has attracted rather more attention as a complication of infectious mononucleosis.[3–6]

A married woman, aged 34, was admitted on Jan. 15, 1954, to the Royal Infirmary complaining of increasingly severe abdominal pain for the past four days. This, and her state of shock on admission, were suggestive of ruptured ectopic gestation. Immediate laparotomy showed that the cause was, instead, a ruptured spleen, and the peritoneal cavity was filled with blood. The spleen, which was removed, measured 12 × 9 × 6 cm. and weighed 250 g. Its most remarkable feature when cut open was a fresh hæmatoma immediately beneath the capsule, through a rent in which blood was passing. Besides this, there were numerous smaller pea-size hæmorrhages throughout the rest of the splenic pulp. It was concluded that the rupture was due to pressure from within, from the bleeding, and not to contusion from without. (The patient denied any fall or other injury.) A blood-count showed the picture of acute blood-loss and regeneration: Hb 40%; red cells 1,950,000 per c.mm.; colour-index 1·0; white cells 6000 per c.mm. (polymorphs 43%, stab-cells 38%, eosinophils 1%, lymphocytes 2%, monocytes 16%), with 13 normoblasts per 100 white cells. The patient's serum agglutinated sheep red cells to 1 : 320; and the thymol turbidity was 6 units. Unfortunately two days later the patient developed acute mania (an event recorded previously after splenectomy) and died. Permission for necropsy was refused.

Sections of the spleen show the expected very closely cellular appearance. The follicles seem to be normal in number and frequency, but are less conspicuous than usual because they are composed not of mature lymphocytes but of cells agreeing with the description of the glandular-fever cell. In the pulp the sinuses are narrowed or virtually obliterated by the proliferation of the glandular-fever cells along the walls, whose reticulum appears swollen and œdematous. Lymphocytes are relatively infrequent. Cellular infiltration of the capsular and arteriolar wall, described by Smith and Custer,[4] is hardly to be seen at all. In one section it is possible to study the site of rupture of an arterial wall. Here the intermediate and adventitious coats exhibit cellular invasion practically throughout the wall and loss of normal structure, including fractures of the elastic fibres. At the site of rupture the wall has lost all semblance of structure, and the broken ends lie buried in a mass of glandular-fever cells, which, perhaps by invasion, are responsible for the weakening. In the capsule degeneration, and fracture of the elastic fibres, are found in short segments between which the structure seems normal.

Thanks are due to Mr. C. M. Pearce, F.R.C.S., for permission to describe this case of his.

Department of Pathology,
Royal Infirmary, Blackburn. M. S. SPINK.

1. Forman, L. *Brit. med. J.* 1952, ii, 911.
2. Cooray, G. H. *Ibid*, 1952, i, 693.
3. Milne, M. *New Engl. J. Med.* 1945, **233**, 727.
4. Smith, E. B., Custer, R. P. *Blood*, 1946, **1**, 317.
5. Vaughan, S. L., Regan, J. S., Terplan, K. *Ibid*, p. 334.
6. Belton, C. H. *N.Z. med. J.* 1952, **51**, 111.

Parliament

Registration of Opticians

IN the House of Lords on July 7, Lord MILNER of LEEDS drew attention to the report of the Interdepartmental Committee on the Statutory Registration of Opticians (Cmd. 8531)[7] which under the chairmanship of Lord Crook in 1952 unanimously recommended that a General Optical Council should be set up with the responsibility of keeping a statutory register of opticians. Lord Milner hoped that the Government would introduce legislation at the earliest possible date.

Lord AMULREE, in supporting Lord Milner's plea, said that he was always pleased to see a body of professional people seeking to form a register and to have a council to control their activities.

Lord CROOK said that all the members of the committee had felt that it was unthinkable that a nation such as ours could embark upon great social and health service schemes and yet allow eyesight to be treated by unqualified people. Opportunities for education of opticians were very limited anywhere in this country. Clinical training was almost unknown. Only if the optician had the opportunity of training by medical men would he be as effective to do his job as he wanted to be. He urged that the proposed General Optical Council when it was set up should be given the fullest disciplinary powers. One glaring scandal in eye practice was the ability of the public to select glasses for themselves in chain-stores. The examining bodies and organisations of opticians had gone as far as they could in this matter by voluntary effort, and he hoped that the Government would at any rate incorporate the main grounds of the report in legislation.

Viscount WOOLTON, Chancellor of the Duchy of Lancaster, thought that Lord Crook might have reasonable hopes that in his lifetime some legislation might be passed as a result of his committee's report. It was necessary to be careful about the powers of the proposed General Optical Council. Parliament had always been disinclined to interfere with those already earning their

7. See *Lancet*, 1952, i, 1014.

living in any trade or profession, except in the interests of the public. The Government certainly had legislation in mind, but it might be expected that in any proposals brought forward there would be a minimum of disturbance to the present people in the method of carrying out optical work.

Civil Defence Services

In opening a debate on these services in the House of Commons on July 5, Sir D. MAXWELL FYFE, the Home Secretary, said that with the atom bomb the area of total devastation had a radius of half a mile, of medium devastation three-quarters of a mile, and of lighter devastation one and a half miles. A bomb of a thousand times the destructive power of the "nominal" or Hiroshima bomb would multiply the original figures by 10. The direct immediate radiation occurred at the moment of explosion in the form of gamma rays, which were invisible and intangible, and protective clothing and washing were of no avail against them; but the walls of an ordinary dwelling house gave a marked degree of protection. People in normal health, under cover even within the walls of a dwelling-house outside the area of total devastation, would not be fatally, or even seriously, affected. Whatever the scale of air attacks there would be wide areas which would escape serious damage. It was from there that the battle for survival would have to be fought. On March 31 the Civil Defence Corps had 328,000 members. The National Hospital Service Reserve had 44,000 members. The future emphasis must be on the use of local services as reinforcements. Behind these local forces would stand the centrally organised and controlled mobile columns. It was proposed to appoint a commander-in-chief-designate of the mobile forces.

On the motion that the Draft Civil Defence (Casualty Collection) Regulations, 1954, be approved, Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said that these regulations provided a small, narrow, but important addition to that part of civil-defence organisation for which the Minister of Health was responsible. They were made necessary by the development of atomic and hydrogen weapons. The need had been shown for more strength in the stretcher-bearer and first-aid services, and it was in that field that these regulations applied. County and county-borough councils were required to plan a service for the collection of casualties resulting from hostile action. The services would be operated in conjunction with the ambulance services at present operated by the local authorities.

QUESTION TIME

Homosexuality Inquiry

In answer to a question, Sir DAVID MAXWELL FYFE, the Home Secretary, said that Mr. J. F. Wolfenden, C.B.E., vice-chancellor of Reading University, had agreed to serve as chairman of the committee which was to inquire into the existing laws relating to homosexual offences and prostitution. The terms of reference of the committee were:

"To consider (*a*) the law and practice relating to homosexual offences and the treatment of persons convicted of such offences by the courts; and (*b*) the law and practice relating to offences against the criminal law in connection with prostitution and solicitation for immoral purposes; and to report what changes, if any, are in their opinion desirable."

Mentally Defective Person sent to Prison

Lieut.-Colonel MARCUS LIPTON asked the Home Secretary whether he was aware that a 19-year-old man was sent to prison for three months by the North London magistrate on June 5, because no place was available in a hospital for mental defectives; and whether he would suspend the sentence and arrange for suitable hospital treatment.—Sir DAVID MAXWELL FYFE replied: This man has been certified as a mental defective since his conviction, and I shall be ready to make an order under section 9 of the Mental Deficiency Act, 1913, for his transfer to an appropriate institution if a vacancy can be found before his sentence expires. I understand, however, that all the mental-deficiency hospitals in the region have long waiting-lists and it may prove impossible to find a vacancy. In that event I should not feel justified in recommending any interference with the sentence imposed by the magistrate in full knowledge of all the circumstances of the case.

Lieut.-Colonel LIPTON: Is it not monstrous that a mental defective should have to be sent to prison because the magistrate said that the hospital services seemed to have broken down completely? Can the Home Secretary say that we are civilised while such a case exists?—Sir DAVID MAXWELL FYFE: The hon. member must ask the Minister of Health about the shortage of accommodation for mental defectives, but I must point out in fairness that the magistrate said: "There seems to be but one thing I can do to protect the public and that is to send you to prison for three months." In view of that it would be very difficult for me to let the man out.

Aftercare of Mental Patients

Replying to questions, Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said that precise information was not available as to how many homes for the aftercare of mental patients existed in England and Wales. The Mental After Care Association provided directly or indirectly twenty-three homes in Kent, Surrey, Sussex, Suffolk, and Northamptonshire, with accommodation for 524 patients, and 463 were at present in residence. Two homes were reserved for short-term cases; the remainder provided for long-term cases and for patients on holiday from mental hospitals. The Ex-Servicemen's Welfare Association provided two homes for 50 patients in all.

Fees for Domiciliary Visits

Mr. ARTHUR BLENKINSOP asked the Minister whether he would consider the abolition of the payment of fees to part-time specialists for domiciliary consultations.—Mr. IAIN MACLEOD replied: No, Sir. In any case these fees formed part of the arrangements agreed in 1949 and any change in them would be a matter in the first place for the Medical Whitley Council.

Maternity-home Fire

Replying to a question, Mr. MACLEOD said he had given most careful consideration to the report of the regional hospital board committee of inquiry into the recent fire at Delwood Maternity Home, Reading. He was satisfied that the inquiry had covered very thoroughly all aspects of this most tragic and unfortunate disaster. Looking back on tragic events of this nature it was always possible to have second thoughts, but he considered that the action taken by the hospital authorities, both in the provision of the accommodation and in the matter of medical and nursing supervision, was reasonable and that there was no negligence or breach of duty on their part. The steps taken for the rescue and subsequent treatment of the babies were in accord with the highest traditions of the hospital service. The Ministry of Health was preparing advice to hospital authorities on fire precautions generally, and he would see that this took account of the lessons to be learned. He also understood that the Minister of Housing and Local Government was considering possible strengthening of the relevant building by-laws.

Medical Rejections for National Service

In answer to a question, Sir WALTER MONCKTON, the Minister of Labour, stated that the number of men rejected for National Service on medical grounds was 27,750 in 1948, 36,370 in 1949, 47,314 in 1950, 43,856 in 1951, 42,829 in 1952, and 42,112 in 1953.

Fluoridation of Water-supplies

Replying in the House of Lords on July 6 to Lord DOUGLAS of BARLOCH, Lord MANCROFT, Lord-in-Waiting, said that in 1952 a mission was sent, on the recommendation of the Medical Research Council, to the United States to study the fluoridation of water-supplies as a means of reducing the incidence of dental caries. The Minister of Health accepted in 1953 their recommendation that before fluoridation was generally adopted in this country investigations were desirable. The councils of Norwich and Kilmarnock were informed that for technical reasons their areas were suitable for the studies proposed by the mission, and they were invited to carry them out. They were also informed that the Minister of Health and the Secretary of State for Scotland would provide them with technical advice and assistance and defray the expenses incurred. It was added that, while they were advised that such action would be within their statutory powers, the Ministers would indemnify them for the cost of any legal proceedings in which they might be involved should the legality of their action be challenged. The Minister and the Secretary of State were acting under powers conferred on them under the National Health Service Act, 1946, and the National Health

Service (Scotland) Act, 1947. Similar invitations had been extended to the councils of Anglesey, Darlington, and Watford. The councils of Anglesey, Darlington, Kilmarnock, and Watford had decided to accept the invitation. The Norwich Council had decided to defer their decision.

Consumption of Milk

Replying in the House of Lords to Viscount BLEDISLOE, Viscount WOOLTON said that the pre-war consumption of milk in this country was about two-fifths of a pint per head. Today it was about two-thirds of a pint. British and Scandinavian daily milk consumption per head in 1952–53 was: Norway, 1·1 pints; Sweden, 1·1 pints; Denmark, 0·8 pint; and United Kingdom, 0·7 pint.

Tuberculosis Claims

Replying to a question, Mr. OSBERT PEAKE said that up to the end of last month some 4150 claims had been received from persons who appeared prima facie to be covered by the Industrial Injuries Act regulations as suffering from tuberculosis, and of these about 3500 were successful.

Obituary

HUGH ALEXANDER DUNLOP

M.D., M.Sc. Lond., F.R.C.P.

Dr. Dunlop, whose death on July 2 we announced last week, had been physician with charge of outpatients at Charing Cross Hospital since 1935.

He was born in 1903, in Ayrshire, of a Scottish farming family who migrated to Sussex when he was four years old. From Midhurst Grammar School he went to King's College to begin his medical studies. There he won the Huxley prize in physiology, the Hughes prize in anatomy, and the Jelf medal. He continued his successful student career at Westminster Hospital Medical School, where he won the Guthrie scholarship and the Bird gold medal.

After qualifying in 1924 he held house-appointments at Westminster Hospital. He graduated M.B. in 1927, and while holding a Berridge research studentship and a university studentship he acted as demonstrator in physiology at King's College. He also taught advanced anatomy and pharmacology. With this background it was not surprising that his knowledge of the basic sciences of medicine was probably unrivalled among his generation of clinicians. Later he joined the staffs of the Metropolitan Hospital and the Royal Waterloo Hospital, and in 1935 he was appointed to the staff at Charing Cross. Three years later he was elected F.R.C.P. He also became medical tutor at Charing Cross and examiner in pharmacology for the universities of London and Cambridge. He continued his association with King's College as lecturer in applied physiology, and in 1948 he was elected a fellow of the college. Soon after the beginning of the late war he had a breakdown in health from which he never completely recovered, and he had to give up some of his hospital appointments.

A colleague writes: "In wit and in intellect, and even in appearance, he reminded his friends of Dr. Samuel Johnson. He was a great conversationalist and lover of poetry, and would quote from memory long passages from his favourite poets, especially Burns and Byron. With his gifts and personality he would probably have been happier in academic medicine, and in some way, he resembled the popular picture of a professor, short-sighted, absent-minded, stooping, intensely studious, but with a most humorous mind, a born lecturer, and with a truly lovable personality. He had a wonderful gift of friendship, and he inspired personal loyalty from students and colleagues, which persisted even through the later years when he was often handicapped by ill health."

Dr. Dunlop married Miss Kathleen Hibberd, a former Westminster Hospital nurse, and she survives him with three sons.

ARTHUR HILLYARD HOLMES

M.D. Manc., F.R.C.P.

Dr. Hillyard Holmes, consulting physician to the Manchester Royal Infirmary, died on July 3 at the age of 65.

He was born in Burton-on-Trent, but he spent most of his youth in Australia, returning to this country to study medicine at the Victoria University of Manchester where he graduated M.B. with honours in 1911. At this period, while holding house-appointments in Manchester and London, he began his work on the auriculoventricular bundle in mammals and on the Purkinje fibres in the auricles of birds. For these studies he was awarded the M.D. degree in 1914.

At the beginning of the 1914–18 war he served with the British Red Cross Society in Serbia, and for his work during the retreat of the Serbian army into Albania he was awarded the Order of the Royal Red Cross of Serbia and the Order of St. Sava (4th Class). Later, with the R.A.M.C., he saw service in India and Mesopotamia. In 1916 he returned to Manchester to become resident medical officer at the Royal Infirmary and to join the honorary staff of Ancoats Hospital. He also became lecturer in applied anatomy and in medicine at the university. In 1921 he was appointed assistant physician to the Infirmary, and the same year he took the M.R.C.P. Though he remained a general physician, his particular interest was in diseases of the chest and in cardiology. In 1936 he was elected F.R.C.P., and in 1949 he was chosen as president of the Manchester Medical Society. He retired from the staff of the Infirmary only three months ago.

The last ten years of his life were enriched by his wardenship of Lister House, the hostel where students live during their resident appointment in the wards of the Infirmary. He took on this job almost by chance in 1942 when his Manchester house was destroyed in the blitz, and he proved an outstanding success, handling the students with tact, firmness, and sympathy. His flair astonished some who did not know his gift for spotting winners among his students and the kindness and generosity with which he so often unobtrusively backed his choice. His wardenship left him free to have a weekend home outside Manchester, and at his house at Bakewell he returned to his earlier interests of horses and dogs without losing his taste for his later hobbies of cricket and chess.

Dr. Holmes leaves a widow and two daughters.

TUDOR EDWARD HOWELL

M.B. Lond.

Dr. T. E. Howell, principal medical inspector of mines, died on June 23 at the age of 53.

He took up medicine later than usual because his first career was coalmining. His training for this work included two years in France at a mining school, and he later became manager of a mine in South Wales. He studied medicine at Guy's Hospital, and he took the Conjoint qualification in 1934 and the M.B. London three years later. He held the posts of chief clinical assistant to outpatients and of medical registrar at Guy's, and spent a short time in general practice before joining the Factory Department of the Home Office in 1938 as H.M. medical inspector of factories. He was posted to Bristol, and his area included the West of England, Cornwall, and South Wales. He was also appointed lecturer in industrial hygiene at Bristol University.

In 1943 he transferred, appropriately, to the Ministry of Fuel and Power as deputy chief medical officer, and, on Dr. S. W. Fisher's retirement, he succeeded to the senior post. He served for many years on the medical committee of the Institution of Professional Civil Servants, and he took a prominent part in the preparation of the evidence to the Howitt Committee. Some eighteen months ago he retired because of ill health and went to live at Southborough in Kent. He was unmarried.

A colleague writes: "Howell was a difficult man to get to know because he was reticent about himself, but despite his reserve he was warm-hearted and friendly. He was a great battler for the dignity and status of the medical profession and he felt keenly the comparatively low status of doctors in the Civil Service vis-à-vis the administrators. He was the reverse of the narrow specialist and he took a lively interest in the arts—he was a capable painter in oils—in literature, and in agricultural pursuits. One of his favourite journals was the *Farmers Weekly*. He was an able and vigorous debater and a clear thinker, and if the Civil Service doctors ever achieve proper status and conditions it will be due in no small measure to Howell's energetic spade work."

MICHEL POLONOVSKI
M.D., D.Sc.

Professor Polonovski, who died with his wife in a motor accident on June 8, while on his way to a meeting of physiologists in Lille, had many friends and admirers in this country. He was the doyen of French laboratory workers and the virtual founder of an important school of biochemistry. A brilliant researcher, a stimulating teacher, a leader in the Faculté de Médecine of Paris, and an organiser of conferences and societies, he had well been styled *l'ambassadeur de la pensée française*.

After distinguished service in the army, Polonovski returned in 1918 to civilian life to work with his father, Max Polonovski, on the synthesis of alkaloids. His investigations on the nature and mode of action of eserine date from this period. In 1920 he went to Lille as an *agrégé* responsible for the teaching of organic chemistry, and in 1924 he succeeded to the chair of biochemistry there. In 1936 he was appointed to the chair of biochemistry in Paris.

His interests in biochemistry were unusually wide and his output of work was prodigious. His more important contributions included studies on the sugars of human milk, the metabolism of ammonia, acetone, and copper, the blood pigments, and the pterines. He wrote also many papers on enzymology and applied pharmacology and was the author of three standard textbooks. He presided over the Congrés International de Biologie Clinique in Paris in 1947, and he visited London in 1951 for the second International Congrés of Clinical Pathology, when he lectured on haptoglobinæmia. He was in his sixty-sixth year.

One of his English associates writes:

"Polonovski was an alert and rather dapper little man, with a white moustache and a decided air of distinction, although his manner was invariably quiet and unassuming. His clear blue eyes betrayed a certain shyness but at the same time an innate friendliness: even when he smiled this shyness persisted. He was a born orator, for elegance and clarity characterised his speech at all times, while a quiet and subtle humour, which was apt to show itself unexpectedly, always delighted his audience. There was beauty in his diction, his phrasing, and his expression. I recall with pleasure his charming manner and the brilliance of his conversation over *déjeuner* in his apartment in the Boulevard Raspail, where he and Madame Polonovski entertained so hospitably and made strangers feel so welcome. Afterwards he would often display their collection of antique ivory figures and other *objets d'art*—but few were privileged to hear Polonovski the musician at the piano. He was a man of culture, a devout Christian, and an upholder of family tradition. He spoke little English, but he listened attentively and with an air of amusement if one talked to him slowly. Only a month before his death he proudly showed some of us round his newly opened department in the rue des Saints Pères. It is sad that he should have waited so long for premises worthy of his greatness and then had so little opportunity to enjoy them."

Births, Marriages, and Deaths

BIRTHS

McLAREN.—On June 27, at G. Udayagiri, Orissa, India, to Olga (née Evans), wife of Dr. D. S. McLaren—a daughter (Jillian Mary).

Notes and News

A MEMORIAL TO MANSON

ON July 7, at Old Meldrum, Aberdeenshire, a tablet was unveiled commemorating the birth of Sir Partick Manson on Oct. 3, 1844. It has been placed on the wall outside Cromlethill, the house in which he was born, and the inscription reads:

Birthplace of
Sir PATRICK MANSON
G.C.M.G., M.D., F.R.C.P., D.SC., LL.D., F.R.S.
1844–1922
"The Father of Tropical Medicine"
This memorial plaque has been erected by the London School of Tropical Medicine, founded by him in 1899

The unveiling was performed by Sir Alan McLean, a nephew of Sir Patrick's and convenor of the Aberdeenshire County Council, and the principal speakers were Sir Thomas Taylor (principal of the University of Aberdeen), Sir George McRobert (representing the Royal Society of Tropical Medicine), Prof. Brian Maegraith (of the Liverpool School of Tropical Medicine), Sir Philip Manson-Bahr (son-in-law and biographer of Manson), Dr. M. G. Le Roux (provost of Old Meldrum and medical officer of health), and Dr. Andrew Topping (dean of the London School of Hygiene and Tropical Medicine), to whom the memorial owes its inception. The ceremony took place in fine weather amid beautiful and historic surroundings, and afterwards a luncheon was held at the Meldrum Arms at which the 30 guests included Sir Patrick's surviving son (Mr. David Manson), three granddaughters, and several old friends and associates from Aberdeen University.

THE FLYING DOCTORS

MOST people have heard of the Australian Aerial Medical Services, but not all of them will have realised how large a part the services play in the lives of those whose homes are in the thinly populated areas that make up most of Australia. The radio and air links on which the scheme depends have done much more than provide prompt help in an emergency, for they have enabled the folk in the "outback" to make day-to-day contacts among themselves and with the coastal cities, and so remove one of the sternest features of life in those parts—isolation. The landing-grounds originally provided for the doctors' planes have encouraged the civil air lines to fly their planes that way; and the planes have brought fresh fruit and vegetables and many other things that make life less rugged in such a climate. The children's lessons come over the radio from a teacher in Alice Springs, and (what makes it so better than the usual radio teaching) the pupils can ask and answer questions, for this is a two-way network. In this and other ways the flying-doctor service has helped to make something of this uninviting country: where pioneers once struggled to keep a foothold (and sometimes failed), families now live in comfort and security.

One of the notable names in the story is that of Dr. Allan Vickers, who is at present visiting this country and who described these and other developments at a meeting of the Royal Empire Society in London on July 8. In his account of the early days, Dr. Vickers told of the tenacity of the Rev. John Flynn, superintendent of the Australian Inland Mission, who first thought of putting doctors in the air. At that time, 1917, both wireless telegraphy and aviation were in technical infancy, unsuited and hardly adaptable to the sort of use that Flynn had in mind. Aircraft soon became more reliable (though no cheaper), but the combined receiver and transmitter that would be needed in fairly large numbers for the "patients" to use was another matter. For a time it seemed that it was altogether too difficult to produce a set which fulfilled these needs and which was simple to operate and not too expensive. But the man for the job turned up, and, in 1926, Mr. Alfred Traeger, chief wireless engineer to the aerial medical services, completed a transmitting and receiving set, embodying several unique features, which enabled Flynn's plan to work.

So, in May, 1928, the first aerial medical service base was established at Cloncurry in Western Queensland. During the first years there were difficulties: money was short and times were hard; but Dr. Vickers was one of the first people at Cloncurry, and those who heard him speak last week can have had no doubt about the success of any venture in which he had a share. In 1934 the scheme received the official blessing

of the Australian government. Though it has always been a private philanthropic organisation, it has had much help, other than direct financial aid, from the State and federal governments. There are now ten bases in all, and the latest annual cost of running them was £132,000, of which £75,000 was met by voluntary subscriptions from the people who live in the areas served.

Discussing the application of the Australian plan in other parts of the world, Dr. Vickers mentioned comparable schemes in the Highlands and Islands of Scotland, in Canada, and in Lapland. He wondered whether there might not be opportunities for aerial medical services in Africa and in other countries where distances were great and doctors few. He and his colleagues, he added, would gladly give what advice they could to any country that was thinking about establishing such a service.

NATIONAL INSURANCE IN 1953

THE report [1] of the Ministry of Pensions and National Insurance for 1953 was published last week. In addition to the annual details about national insurance, the report includes an account of the administration of war pensions in Great Britain and Northern Ireland; this account has also been published as part of a separate report [2] on war pensions.

Except during the first few and the last few weeks of the year, claims for *sickness benefit* were consistently higher in 1953 than in any of the three previous years. In February, the number of claimants rose to over 1,200,000 decreasing to about 820,000 in July and August, rising slowly to 930,000 in November, and falling sharply in December, but at no time dropping below 800,000. The influenza epidemic in January and February, 1953, was milder than the previous epidemic in 1951 and affected mainly London and the surrounding counties. New claims for sickness benefit reached a peak of 276,000 over the country as a whole in the last week of January. This compared with over 400,000 new claims in each of three successive weeks in the 1951 epidemic. The cost of sickness benefit for the year ended March 31, 1953, was over £79 million.

Last October the National Insurance Act, 1953, introduced important changes in the *maternity benefit* provisions. The maternity grant and attendance allowance were replaced by a single maternity grant of £9, the whole of which was payable in addition to maternity allowance; and an entirely new benefit, the home confinement grant of £3, was introduced. The Act also made changes in the maternity allowance, the benefit for mothers who normally go out to work. The report says that 747,000 women received maternity benefit in the year. About 1 in 5 qualified for maternity allowance and 593,000 received an attendance allowance in addition to the grant. The cost of maternity benefits for the year ended March 31, 1953, was £8,700,000.

The number of claims, under the industrial injuries scheme, for *injury benefit* in 1953 was 783,000 as compared with 775,000, 767,000, 818,000, and 799,000 in 1952, 1951, 1950, and 1949 respectively. The great majority of claims came again from the heavy industries, coal-mining accounting for well over a third. About 5% of insured men and 1% of insured women received injury benefit in the course of the year, for average periods of about four and five weeks respectively. About 40% of all successful claims did not last more than two weeks. Industrial injury benefit cost over £10 million for the year ended March, 31, 1953.

The number of new *disablement benefit* claims has increased every year since the beginning of the scheme and it is estimated that in 1953 it reached 117,000, as compared with 96,000 in 1952. This rise is the biggest so far in one year, but even at the 1953 level, claims for disablement benefit were only 15% of the claims for injury benefit. The number of disablement pensions rose by 15,000 during 1952, so that 95,000 pensions were being paid at the end of that year. Of these, three-quarters were for accidents and one-quarter for prescribed diseases. At the end of 1952, about 38% of the disablement pensions, including those for pneumoconiosis, were being paid to colliery workers. About 9% were being paid to women, who are normally employed in the lighter industries. Nearly two-thirds of the pensions were for disablement of 20 or 30%, and less than 4% were assessed at the 100% rate. The average assessment was about 31%. Disablement benefit and its supplementary allowances cost nearly £10 million in the year. The work of the medical boards, who assess the degree of disablement, continued to grow. During 1953 they made 23,109 examinations (apart from pneumoconiosis). In the course of the year, 12,264 appeals were made to 13 medical appeal tribunals, and 44% resulted in a decision in the claimant's favour, as compared with 45% in 1952.

The steady decline in the number of *war pensions* which has been taking place since 1947 continued. The total number of war pensions being paid at the end of 1953, was 931,023, a decrease of more than 28,000 in the year. Of the 11,600 new pensions awarded during 1953, about 60% were for service since the end of the late war.

1. Cmd. 9159. H.M. Stationery Office. 4*s*. 6*d*.
2. House of Commons paper no. 189, session 1954–55. H.M. Stationery Office. 4*s*.

ADVISORY SERVICE ON HOSPITAL ADMINISTRATION

As an experiment, the Ministry of Health is setting up a small advisory service to which hospital boards and committees may submit problems of organisation and methods of service (H.M.[54]64.). To begin with, it is suggested, the new service should be asked to investigate aspects of hospital administration—such as medical records, outpatient appointment arrangements, or wage-paying systems—rather than the organisation of an entire hospital or department. At first it will usually be possible to undertake investigations only for hospitals which are easily accessible to London, where the service will be centred in its early stages.

STEREOSCOPIC TEXTBOOKS

Messrs. Harvey & Blythe, the medical publishers, announce plans for a series of 'Stereotomes' or collections of 3-dimensional colour photographs for use in medical teaching. The first in the series has now appeared [1]: it is a set of 72 slides of post-mortem specimens of congenital heart-disease. This comprehensive collection has been gathered by Dr. J. W. Brown and Dr. L. M. Gerlis, who have written a short accompanying text to set out the points illustrated in the pictures. The quality of the films is excellent, and they are a notable technical advance in medical illustration. There are several devices for viewing the slides: hand-viewers range from an elaborate battery-illuminated model, with 2 focusing arrangements, to a simple viewer which is used by holding it up to natural or artificial light; alternatively, a group of slides can be mounted in a box containing a rotating drum (the 'Sterota') or in a stand which has 9 viewers on each side (the 'Exhibitor'); and another arrangement enables the slides to be projected on to a screen and viewed through polarising spectacles.

The price is high, but not as high as might be expected for colour photography of the first class. Nevertheless, it seems unlikely that the series will prove a best-seller with students, who are seldom keen on anything in this price range; but teachers will be interested in a new method of presenting pathological and clinical material to their classes, and even those who hold most strongly that there are no substitutes for the bedside, the laboratory, or the museum must own that the technical standard of the new slides is remarkable.

The plan for the series includes sets of slides dealing with dermatology, anatomy, surgery, obstetrics, and nursing procedures. A Visual Atlas of Clinical Practice, illustrating conditions particularly suited to this kind of demonstration, will also be published as a series at regular intervals, and the first two volumes are now ready.

PRESENTATION TO Sir JOHN McNEE

HIS medical friends and colleagues, especially those on the staff of Glasgow University, have subscribed to give Sir John McNee his portrait, painted by Sir James Gunn. Sir John retired last year from the chair of the practice of medicine which he had held for 17 years. The presentation was made by Sir Robert Muir, F.R.S., who celebrated his 90th birthday on July 5.

BRITISH PHARMACOPŒIA

IN order to make widely known the innovations in the *British Pharmacopœia, 1953*, the Pharmaceutical Society arranged a series of lectures by members of the Pharmacopœia Commission. These lectures have now been published.[2]

1. A Visual Atlas of Congenital Heart Disease. By J. W. BROWN and L. M. GERLIS. London: Harvey & Blythe. 3 vols. of 24 slides each, with companion text. £10 10*s*.
2. A General Survey of the British Pharmacopœia, 1953. London: Pharmaceutical Press. 1954. Pp. 44. 4*s*. 6*d*.

University of Oxford

Dr. H. A. Krebs, F.R.S., professor of biochemistry in the University of Sheffield, has been appointed to the Whitley professorship of biochemistry in succession to Sir Rudolph Peters, F.R.S.

Dr. Krebs, who is 53, studied medicine at the Universities of Göttingen, Freiburg, Munich, and Berlin. After taking his M.D. degree at the University of Hamburg, he worked for four years at the Kaiser Wilhelm Institute for Biology in Berlin as assistant to Dr. Otto Warburg. In 1933 he came to this country with a Rockefeller research studentship, and he spent the next two years in Cambridge at Sir Frederick Gowland Hopkins's department. In 1934 he received the degree of M.A. Camb. The following year he moved to Sheffield University to become lecturer in the department of pharmacology and later in the department of biochemistry. In 1945 he was appointed to his present chair and also to the directorship of the Medical Research Council unit of cell metabolism. In 1947 he was elected F.R.S., and last year, with Dr. Fritz Lipmann, he received the Nobel prize for physiology and medicine.

In 1932 he introduced his theory of the cyclic formation of urea by a series of reactions involving ornithine, and his later work led to the discovery of the citric-acid cycle (generally known by his name). This is perhaps his best-known contribution to knowledge of intermediary metabolism, but his others include studies on the metabolism of amino-acids and assimilation of carbon dioxide by micro-organisms.

University of Cambridge

Special regulations (approved by grace 5 of Nov. 14, 1953) now permit the degree of bachelor of surgery, which can be registered separately without the degree of M.B., to be conferred by proxy on those who have passed the M.B., B.CHIR. examination. Until a degree has been conferred it cannot be registered, and this procedure enables these new graduates to be admitted to the temporary register before their house-appointments begin, on July 1 or Jan. 1, without waiting for a congregation. At their convenience afterwards, they may attend in person to take the M.B. or have it conferred by proxy. In accordance with these regulations, the degree of B.CHIR. was on June 26 conferred on:

W. V. Agnew, R. W. Ainsworth, P. C. Anderson, P. C. W. Anderson, John Bamforth, J. F. Bennett, June P. Brady, Mary E. Budleigh, D. C. L'E. Burgess, Eric Burkinshaw, J. A. Butler, G. G. Carmichael, R. A. Carter, T. D. Carter, Anne Clarke, Marion Cornelius, I. J. Cour-Palais, Elizabeth J. P. Davies, E. E. Denman, A. E. L. de Thierry, B. H. S. Dixon, Hugh Dovey, J. P. English, Jill M. Evans, D. K. Fairweather, B. E. Farnham, D. T. Finlay, R. N. Galloway, Frances E. Garrad, R. K. Gilbert, J. N. Harcourt-Webster, R. J. Haythornthwaite, Mary E. Hern, K. W. Hickson, Martin Horowitz, R. B. Jenkins, F. L. Johnstone, D. H. Jones, F. E. Kenyon, E. P. Lawrence, J. A. S. Lees, M. J. Littlewood, R. D. Lowe, D. H. Mathias, P. B. C. Matthews, K. L. G. Mills, C. J. Moore, M. T. Moore, R. M. A. Moore, C. B. Mortimer, J. F. Mowbray, R. S. McKim, Irene E. McLaren, M. A. Newland, K. R. Oliver, R. A. Owen, R. W. Payne, M. R. K. Plaxton, Alan Pollard, Diana Ratcliffe, J. C. L. Rawes, J. N. Rea, Sylvia E. Reed, Alfred Robinson, B. H. B. Robinson, J. O. Robinson, J. B. Royston, A. O. Russell, E. S. J. Samuel, J. R. Scott, G. G. Scott-Brown, R. O. Selby, P. R. Shires, R. G. D. Small, J. A. Stamford, G. P. Starck, Lorna M. Stauffer, R. M. Stirland, Elizabeth I. Tanner, G. J. M. Thompson, S. A. Tillyard, J. E. Trapnell, J. C. S. Turner, A. S. Valentine, I. H. M. Veitch, C. A. M. Walkley, R. S. Wardle, J. R. C. Weatherly, Bidi M. Wild, J. C. Willan, W. D. W. Williams, J. F. Wood, Brian Woods.

University of London

Dr. Herbert Spencer, F.R.C.S., senior lecturer in pathology at St. Thomas's Hospital Medical School, has been appointed to the university readership in morbid anatomy and histology at the school.

At a recent examination for the academic postgraduate diploma in bacteriology the following were successful:

G. P. B. Boissard, Paul Chadwick, E. D. T. Chapman, L. A. Hatch, N. A. Hinton, Abdul Quddus Khan, F. N. Macnamara, Bindeshwari Prasad Mishra, E. R. Mitchell, Lakshmi Narayan Mohapatra, Pauline M. Poole, J. A. Rycroft, Pui-Ching Wong.

University of Edinburgh

On July 8 the honorary degree of LL.D. was conferred on Mr. Geoffrey Keynes.

University of Dublin

On July 5 at the school of physic, Trinity College, the following degrees were conferred:

M.D.—D. W. Beckett, Arthur Graham, O. H. Killen, V. O. McCormick, H. H. Robinson, L. R. Robinson.

M.B., B.Ch., B.A.O.—Margaret H. Allen, E. J. Arnott, J. D. Bell, Ruth V. Bewley, Marjorie L. Bowen, N. A. Burton, Peter Cavanagh, R. W. Childers, E. D. Cotter, I. J. Dalrymple, Augustine S. Darragh, E. P. Davison, A. H. Erdberg, D. N. Golding, D. F. Hogan, John Hyland, Margaret Image, M. A. Johnston, Douglas King, Olikoye Ransome-Kuti, B. A. Lyder, R. W. McKeever, T. M. Maguire, K. C. Martin, Marien A. L. Miller, S. C. Moles, J. K. Murphy, Margaret E. K. Nelson, H. M. McC. Norman, L. A. H. Oulton, P. R. Payne, Elizabeth A. Pim, D. B. E. Quamina, A. G. Resnekov, S. F. Ryan, O. W. Samuel, Elizabeth S. M. Smith, I. D. Smyth, J. M. Stubbs, Marion G. Thomas, W. D. Thornton, T. J. Walker, Marjorie Williams, R. D. Williams, Stephanie M. Wilson, Mary A. Young.

University of Glasgow

On July 10 the following degrees and diplomas were conferred:

M.D.—Alison M. T. Drimmie (honours); Anne C. Aitkenhead, R. C. Brown (high commendation); J. T. S. Brown (commendation); J. K. T. Cherry, W. J. L. Francis, C. D. T. MacLean, William Wilson.

Ch.M.—Kenneth Fraser (honours).

Ph.D.—I. A. Boyd, M.B., I. D. Ferguson, M.B., A. J. Hale, M.B., W. S. T. Thomson, M.B.

M.B., Ch.B.—M. K. Browne, A. McC. Connell, Francis Moron (commendation); C. E. Anderson, A. J. Blair, W. W. Buchanan, John Callender, N. W. Cameron, Robert Campbell, Anthony J. Carr, Sheila A. Couper, Andrew Craigie, James H. Elliot, P. S. Fee, Evelyne M. T. Fisher, J. A. Gardner, F. C. Garry, A. J. Gibson, Christina McI. Hamilton, W. E. F. Lloyd, A. C. McBlane, L. P. Millar, D. C. I. Milne, Ian Monteith, Mary M. O'Dea, Frances K. Philips, W. B. C. Robertson, J. G. Sandeman, J. A. Scott, J. T. Stewart, A. McI. Tait, D. J. W. Taylor, Jane A. F. Taylor, J. D. Templeton, Elizabeth P. Wilson, Mary Wishart.

D.P.H.—Robert Dickie, Margaret R. Farrell, J. E. Gallagher, J. C. Gillespie, William Hamilton, Leonard H. Holroyd, Elizabeth H. Lawrie, Marjorie J. Lyon, Jean M. MacArthur, Alexander McClelland, Moira R. Mackie, Peter Ross, Peter Roughead, Elizabeth D. M. J. Thomas.

University of Aberdeen

On July 9 the honorary degree of LL.D. was conferred on Dr. Mary Esslemont, general council assessor to the university court since 1947, and president of the Medical Women's Federation of Great Britain.

On July 8 the following degrees were conferred:

M.D.—W. A. Cramond, A. L. Speirs, Elizabeth P. N. Turnbull (commendation); P. H. R. Anderson, Hugh Brebner, Sydney Catterall, John Fraser, Wallace Ironside, Thomas Lyall, J. K. Russell, Lorna Wheelan.

Ph.D.—F. E. Hytten, M.B.

M.B., Ch.B.—J. K. Finlayson, Isabel M. Noble, M. J. Williams, W. McA. Easson (honours); M. J. Emslie, D. S. Robbie, D. A. Aitken, Myrtle Farquharson, A. C. B. Dean, Ena E. Thomas (commendation); Eleanor M. Adams, Alexander Addison, J. S. Allan, Valerie E. Anderson, Joyce D. Baird, J. W. Beveridge, A. J. M. Birnie, James Bruce, Derek Chalmers, A. I. Cheyne, Janet D. Davidson, Ian Donald, J. C. Donald, William Duncan, A. R. Duthie, Maureen B. Duthie, Doreen Ferguson, John Forbes, F. L. P. Fouin, Fiona J. Fraser, I. C. Fraser, R. McW. Fraser, N. G. Fyvie, Helen A. Geddes, Joyce M. Gellatly, J. R. Gillespie, N. R. Gillies, Elizabeth F. Hamilton, J. H. Henderson, D. I. Hunter, H. A. Imray, J. D. Kinnell, Margaretta L. Laing, I. R. Lawson, H. J. A. Longmore, R. W. Macandrew, G. A. McDonald, K. J. MacDonald, Agnes M. McGlashan, Paula M. McKellar Colin Mackenzie, F. A. Mackenzie, S. M. Mackenzie, I. A. Mackie, E. C. Macleod, J. L. Matthew, D. A. Middleton, Anne M. Mitchell, J. G. C. Munro, Duncan S. Murray, I. D. Neish, A. MacG. Nisbet, A. H. Park, A. G. Philp, Lora Y. Pratt, Ramdath Ramkissoon, I. W. C. Reid, P. D. Robertson, C. C. Scott, D. C. Shillingford, Alexandra G. Smith, H. G. Smylie, J. C. Steen, W. A. Stewart, W. E. Strachan, Douglas Stuart, J. S. Sutherland, Mary B. Symon, G. B. Taylor, J. F. Taylor, Mary Younie.

National University of Ireland

The degree of M.D. has been awarded to Prof. John Dunne for published work.

Dr. Francis Dunkin has been appointed professor of dental surgery at University College, Dublin, and Dr. J. D. Kennedy, professor of pathology at University College, Galway.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on July 5, with Dr. Andrew Allison, the president, in the chair, Sir Russell Brain, Sir David Campbell, Sir James Learmonth, and Sir John McNee were admitted honorary fellows.

Royal College of Physicians of Ireland

The following have been admitted to the licentiateship of the college:

G. L. N. Alderdice, Sheila M. Arnold, Eoin Barrett, E. J. Berstock, Dayal Bhana, Felix Blain, A. C. Bradley, Michael Brennan, B. P. de Brit, Robert Brown, N. H. Coleman, A. C. Connolly, Vivian Mary Cowin, T. B. Dobson, Helen Mary Dunne, C. P. A. Dupont, Moira L. Franklin, L. R. Golicz, Louise M. Hamilton, J. E. Jolley, Kingsley Jones, F. G. Kenny, J. L. Layng, Sybil E. Katherine Meharg, N. A. Moss, P. J. McCrann, A. I. MacKinnon, G. M. Noel, L. M. Nurock, J. F. O'Connell, J. C. Murphy-O'Connor, E. H. O. B. Pratt, Ryszard Rumian, Iris Serruya, Elsie L. M. Wallace, N. J. de Wet, Maria I. Znamirowska.

Royal Society of Medicine

At the annual meeting of this society on July 6 the following were elected officers for 1954–55:

President, Sir William Gilliatt; immediate past president, Sir Francis Walshe, F.R.S.; hon. treasurers, Dr. S. Cochrane Shanks and Mr. E. G. Muir; hon. secretaries, Mr. J. C. Ainsworth-Davies and Dr. Geoffrey Organe; hon. librarians, Prof. Alan Kekwick and Prof. Charles Rob; hon. editors, Sir Heneage Ogilvie and Dr. E. C. Warner; hon. directors of photography, Prof. K. J. Franklin and Dr. D. A. McDonald; other members of council, Prof. Ian Aird, Mr. L. R. Broster, Dr. E. R. Cullinan, Sir Henry Dale, O.M., F.R.S., Dr. Maurice Davidson, Sir Stewart Duke-Elder, Sir Horace Evans, Mr. R. J. Furlong, Sir Gordon Gordon-Taylor, Dr. Basil Kiernander, Dr. Katharine Lloyd-Williams, Dr. G. B. Mitchell-Heggs, Dr. H. E. P. Scott, Mr. H. J. Seddon, and Dr. A. T. M. Wilson.

Royal College of Surgeons of England

At a meeting of the council held on July 8, Sir Harry Platt was elected president of the college in succession to Sir Cecil Wakeley, who has held office for the last five years. Prof. Lambert Rogers and Mr. Julian Taylor were elected vice-presidents.

Mr. Victor Lambert (Manchester) was elected a member of the court of examiners to examine in otolaryngology. Mr. H. A. S. van den Brenk (Melbourne) was elected a research fellow in the H. N. Smith research unit. The Begley prize was presented to M. A. Cowan (Sheffield).

The following professors and lecturers were appointed:

Hunterian professors.—Mr. C. P. Wilson, Lateral Cysts and Fistulæ of the Neck of Developmental Origin; Mr. H. B. Stallard, Retinoblastoma treated by Radon Seeds and Radium Risks; Mr. R. V. Cooke, Advanced Carcinoma of the Colon; Mr. John Foster, Stricture of the Valve of Krause; Mr. N. R. Barrett, Primary Tumours of Rib; Prof. Gilbert Causey, Vascular Supply in Fatigue and Regeneration of Peripheral Nerve; Dr. W. T. Cooke, Nutritional and Metabolic Factors in the Ætiology and Treatment of Regional Ileitis; Mr. F. G. Kergin; Mr. Philip Newman, Spondylolisthesis; Mr. H. R. S. Harley, Subphrenic Abscess; Mr. H. G. Hanley, Surgery of Male Subfertility; Mr. Robert Roaf, Deformities as seen in India; Mr. W. J. Atkinson, Early Management of Head Injuries; Mr. A. C. Bingold, Benign Fibrous Tumours of Single Bones; Prof. R. V. Bradlaw; Mr. Kenneth Harrison, Ectopic Mixed Salivary Tumours; Mr. J. McE. Potter, Angiomatous Malformations of the Brain.

Arris and Gale Lecturers.—Dr. B. D. Wyke, Cortical Control of Movement; Mr. A. G. Riddell, Ammonia Intoxication in Surgical Patients; Dr. W. M. Keynes, Supravesical Fossa.

Erasmus Wilson Demonstratorships.—Dr. B. E. Heard, Dr. G. D. Lumb, Dr. J. S. Young, Dr. L. M. Franks, Dr. L. W. Proger.

Arnott Demonstrators.—Professor Causey, Dr. Frank Stansfield, Prof. R. J. Last, Dr. Stefan Engel, Dr. H. J. Hoffmann.

Diplomas of fellowship were granted to H. A. S. van den Brenk, H. N. Baylis, and G. E. Lynch.

The Buckston Browne dinner was held in the new great hall on July 7. The fluctuations of parliamentary business made it uncertain whether Mr. Iain Macleod, Minister of Health, would be able to include in his evening's duties that of proposing The College; so Lord de L'Isle and Dudley, V.C., Secretary of State for Air, proposed this toast in a friendly speech. In his reply, Sir Cecil Wakeley recalled how Mr. Buckston Browne (as he then was) walked into the college office one day in July, 1927, produced £5000 in bank notes from his pocket, "and the dinner was on." Sir Cecil reported two years' steady progress in the affairs of the college since the last Buckston Browne dinner. A new scientific department, that of pharmacology, had been opened, thanks to the generosity of the pharmaceutical industry—in particular, Imperial Chemical Industries. The department's laboratories were in Queen Square, and it was hoped to bring them to Lincoln's Inn before many years had passed. The greatest progress had been in building: above the great hall and the council room there were the three Wellcome museums, one in partial use and the other two nearing completion. And a much-needed extension of the library was being built on the site of the pre-war lecture-theatre. But all this, the President added ruefully, was a desperately expensive business, and one which had already outrun the income of the college. The views of the council on possible remedies would shortly be made known, and Sir Cecil urged fellows and members to do all they could to support whatever plans might be proposed. Sir Reginald Watson-Jones gave a generous welcome to The Guests, for whom Lord Waverley replied. Mr. Macleod was, after all, able to be there, and, in a brief speech, he spoke warmly of the help and coöperation that he and his Ministry had had from the college and particularly from its president.

London Hospital

The *Manchester Guardian* (July 7) reports that an arbitrator in a surrogate court in New York State has ruled that this hospital is entitled to a bequest of $164,000 (about £58,000), though it has been nationalised since the will was made. The testator's intention to benefit residents of the area and the institution would, it was held, still be fulfilled through the hospital.

Society of Anæsthetists in Hong-Kong

The first meeting of this society was held on June 17. The hon. secretary is Dr. Y. K. Poon, department of surgery, Hong-Kong.

Dinner to Army Consultants

The annual dinner for consultants to the Royal Army Medical Corps was held in London on July 1. Lieut.-General Sir Frederick Harris, director-general of Army Medical Services, who was in the chair, proposed a toast to the guests, and Major-General Sir Max Page replied.

British Medical Association

At the annual dinner of the association which was held in Glasgow on July 8, Sir Hector Hetherington, principal and vice-chancellor of the university, in proposing the toast of the association, confessed that he felt as Dr. Adenauer must have felt when he lately proposed the health of the British Army of Occupation, but he added that he would always welcome any invading army which was commanded by Rear-Admiral Sir John McNee. Sir John, the new president of the association, whom the principal described as not merely the head of the B.M.A. for the coming year but also its stomach, thanked those who had been responsible for arranging the conference, and expressed the hope that in his year of office he would play his part in the counsels of the association. Dr. Ian Grant, the new chairman of the Representative Body, proposed the health of the guests, who had travelled from every corner of the Commonwealth and from many European countries. In reply Dr. J. A. Waterman, of Trinidad, expressed the pride which his branch felt in their long association with the parent body. On behalf of the City of Glasgow the senior magistrate, Baillie David M. Wardley, asked the B.M.A. not to wait another 32 years till next they chose Glasgow for their deliberations.

CORRIGENDUM: *Ætiology of Bronchogenic Carcinoma.*—In the paper by Prof. Evarts A. Graham (June 26) we should not have ascribed the carcinoma shown in fig. 4 to painting with "tobacco tar." It was produced by tar from cigarette smoke; and (as Dr. Graham points out) the smoke of a burning cigarette contains many things besides the combustion products of tobacco.

Diary of the Week

JULY 18 TO 24

Monday, 19th

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE, E.C.1

5.30 P.M. Dr. S. S. Kety: Theory and Applications of Inert Gas Exchange.

Tuesday, 20th

SOCIETY FOR THE STUDY OF ADDICTION

8 P.M. (11, Chandos Street, W.1.) Dr. Harry Feldmann (Geneva): Modern Treatments of Alcoholism, with special reference to Apomorphine.

Wednesday, 21st

YORKSHIRE SOCIETY OF ANÆSTHETISTS

8.30 P.M. (Leeds General Infirmary.) Dr. R. P. Shackleton: The Rôle of the Anæsthetist in the Treatment of Tetanus.

Appointments

BAXTER, R. W., M.B. Glasg., D.A.: whole-time asst. anæsthetist (S.H.M.O.), based on Invernees Hospital.

FORBES, D. A., M.B. Aberd., D.A.: consultant anæsthetist, Royal Hospital, Chesterfield, and Victoria Hospital, Worksop.

HOPKINS, T. P., M.B.: asst. orthopædic/traumatic surgeon, Neath.

HUNTER, W. M., M.B. Lpool: asst. school M.O., Nottingham.

KENNEDY, K. B., M.B. N.U.I.: asst. anæsthetist (S.H.M.O.), Mid-Glamorgan (Bridgend).

MORRISON, S. L., M.B. St. And., D.P.H.: deputy M.O.H., Oldbury.

SOUTHGATE, JOHN, M.B. Lond.: whole-time asst. pathologist, Leicester Royal Infirmary.

STORRING, F. K., M.D. Durh.: asst. pathologist, Llandough Hospital.

SWANGREN, EVELYN, M.B. Durh., D.OBST.: asst. M.O.H., Rotherham.

WELLS, A. L., M.D. Belf., M.R.C.P.I., D.C.P., D.P.M.: consultant pathologist, Llanelly.

WHEELDON, F. T., M.B. Lond., F.R.C.S.: consultant orthopædic surgeon, Plymouth clinical area.

Leeds Regional Hospital Board:

ANNAN, J. H., M.B. Edin., F.R.C.S.E.: part-time consultant in orthopædic surgery, Huddersfield area.

ROZYCKI, Z. J. D.: whole-time S.H.M.O. in thoracic medicine, Middleton, Bradford (A), and Leeds (B) groups.

WARD, M. W. P., M.A., M.B. Camb., D.M.R.D.: part-time consultant in radiology, Harrogate General Hospital and Leeds hospitals.

Liverpool Regional Hospital Board:

FRANCIS, I. L., M.B. Lpool, F.F.A. R.C.S., D.A.: part-time consultant anæsthetist, Liverpool city area.

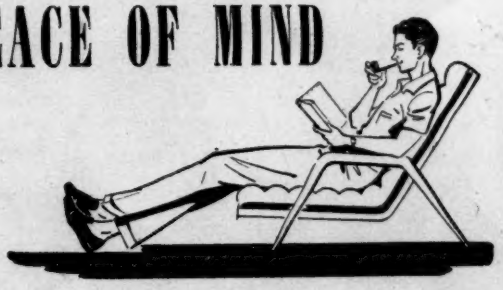
GLAZOWSKI, EDWARD, MED. DIP. U. Cracow: whole-time asst. pathologist, Walton Hospital.

KUPFER, E. M., M.B. Lond., F.R.C.S.: whole-time asst. orthopædic surgeon, Chester area.

O'BRIEN, P. F., M.B., D.P.M.: whole-time asst. psychiatrist, Winwick Hospital.

PRACY, ROBERT, M.B. Lond., F.R.C.S.: consultant E.N.T. surgeon, St. Helens, Warrington, and Ormskirk hospital groups.

PEACE OF MIND



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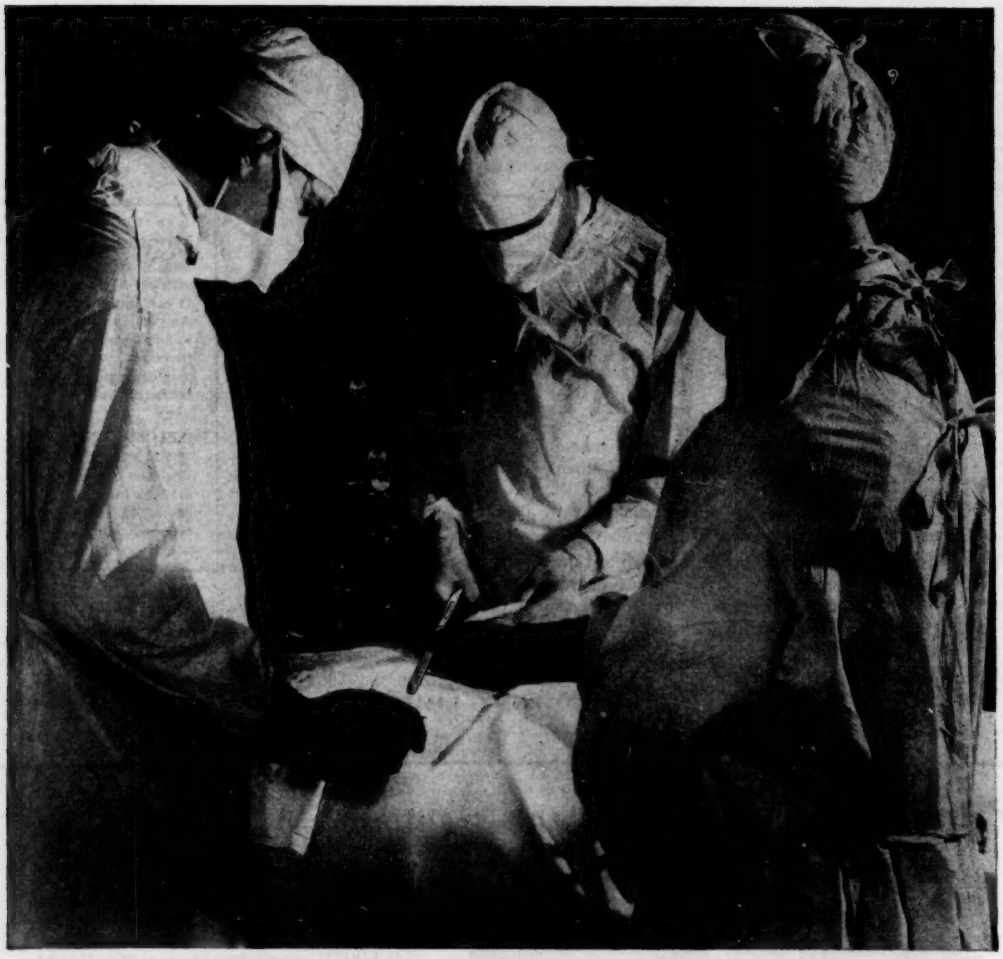
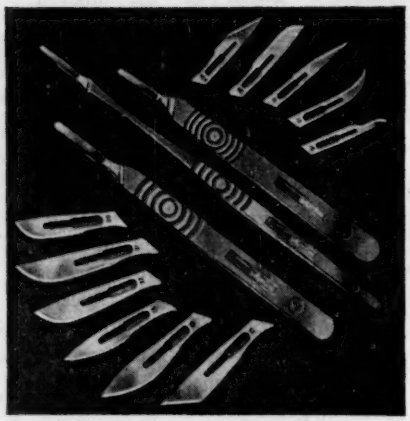


Modern surgery insists . . .



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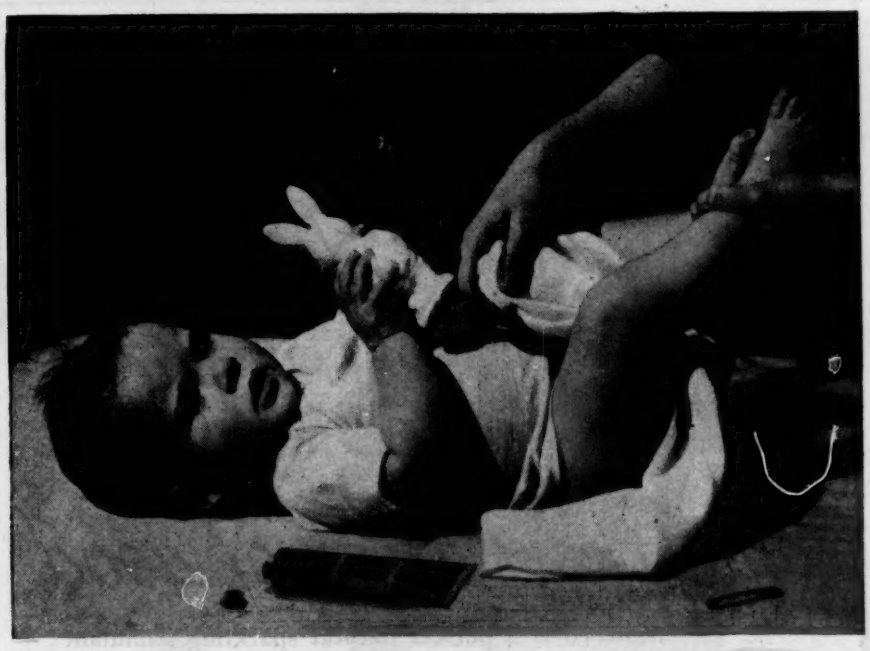

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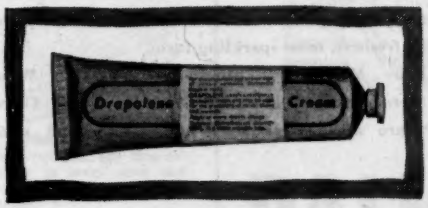

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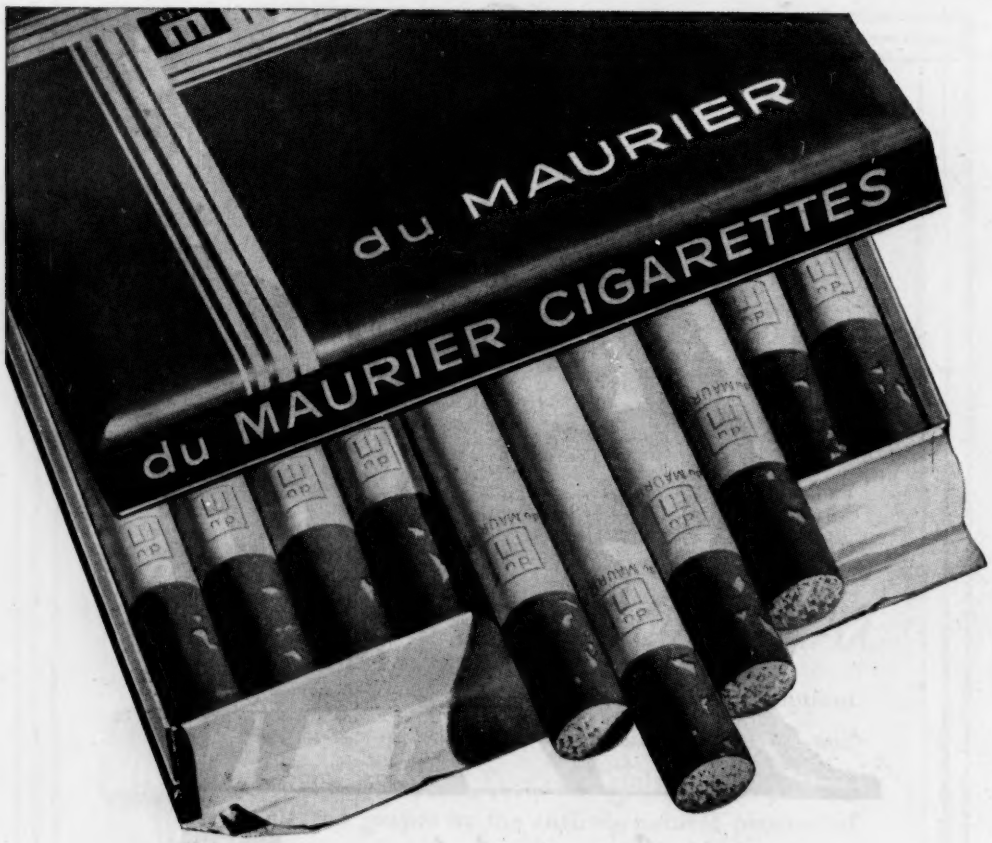

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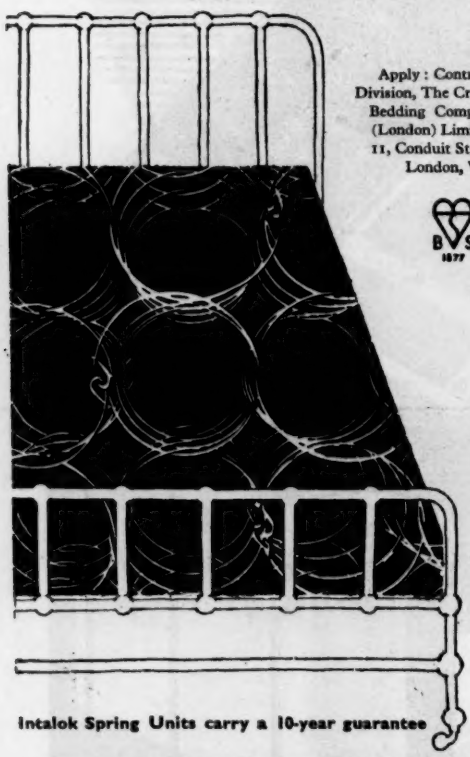

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ACADEMIC AND EDUCATIONAL SECTION *Page* 42

ANÆSTHETICS

Royal Free, W.C.1. Sr. H.O. & H.O... 45
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Academic and Educational

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

(Incorporating the teaching facilities of Queen Charlotte's Maternity Hospital, Chelsea Hospital for Women and the Department of Obstetrics and Gynæcology at Hammersmith Hospital)

Applications are invited from graduates, with a registrable qualification, for enrolment for the AUTUMN TERM (30TH AUGUST–27TH NOVEMBER, 1954). Graduates attend each of the constituent hospitals in turn for clinical work, and attend lectures and special demonstrations at all 3 hospitals. Enrolment fee £3. Tuition fee £30 for 1 term, £55 for 2 terms.

General practitioners wishing further experience in obstetrics may be accepted to attend the course at Queen Charlotte's Maternity Hospital for shorter periods—i.e., 2–4 weeks. They will be allowed to do normal deliveries and will have the opportunity of attending the combined classes of lectures and demonstrations at the 3 hospitals of the Institute. Ministry of Health grants are payable to approved general practitioners attending for a period of 2 weeks.

During the winter vacation, graduates may attend the practice of the hospital at Hammersmith Hospital. Fee £1 per week.

A refresher course for General Practitioners will be held from 28th February to 5th March, 1955.

Hostel accommodation is available at Queen Charlotte's Hospital and at Hammersmith Hospital.

Further particulars can be obtained from the Secretary, Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, London, S.W.3.

UNIVERSITY OF GLASGOW

POSTGRADUATE MEDICAL EDUCATION COMMITTEE

PRIMARY EXAMINATION FOR THE SURGICAL FELLOWSHIPS

A course of instruction in Anatomy, Physiology, Biochemistry, Pathology and Bacteriology suitable for candidates preparing for the Primary Examination of the Fellowship qua Surgeon of the Royal Faculty of Physicians and Surgeons of Glasgow will be held from 11TH OCTOBER to 3RD DECEMBER, 1954. (The Primary Examination conducted by the Glasgow Royal Faculty is accepted by the Royal Colleges of Surgeons of Edinburgh, of England, and in Ireland in lieu of the corresponding examinations of these bodies.) The course will comprise a total of approximately 160 hours' instruction given daily from MONDAYS to FRIDAYS between the hours of NOON and 5.30 P.M. The course will be open to the junior staff of hospitals in the Western Region of Scotland and also to other suitable applicants. Applicants not employed in the hospitals of the Western Region will, so far as can be arranged, be given an honorary clinical attachment to 1 of the surgical Teaching Units. The fee for the course is 25 guineas.

COURSE IN CHEMOTHERAPY

A short intensive Course on the Principles and Application of Chemotherapy in Acute and Chronic Infectious Diseases will be held at Ruchill Hospital, Glasgow, from MONDAY, 4TH OCTOBER, to SATURDAY, 9TH OCTOBER, 1954. The course will comprise: (1) Systematic lectures followed by appropriate clinical demonstrations on the different infectious diseases, including pneumonia and tuberculosis. (2) Lectures and demonstrations on the scope and effective application of all forms of chemotherapy. (3) Practical demonstrations of the techniques used in the diagnosis and control of infectious diseases. The fee for the course is 5 guineas. The usual arrangements for financial assistance are available to National Health Service practitioners attending this course whereby the fee, cost of travelling and subsistence, and locum expenses may, subject to certain conditions, be recovered from Government sources.

COURSE IN MENTAL DEFICIENCY

A short intensive Postgraduate Course in Mental Deficiency suitable for School Medical Officers and others interested will be held from 11TH OCTOBER to 29TH OCTOBER, 1954. The course will comprise lectures and demonstrations, instruction in mental testing, and visits to Institutions. Fee: 15 guineas. The course is limited to 20 practitioners.

Those wishing to attend any of these courses should make early application to the Director of Postgraduate Medical Education, The University, Glasgow, W.2, from whom further details and a syllabus may be obtained.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

A 3-months COURSE OF POST-GRADUATE SURGERY suitable for surgeons requiring a refresher course in the current outlook on general surgery or for graduates preparing to specialise in surgery, starts on 27TH SEPTEMBER, 1954, and 21ST MARCH, 1955. The programme has been reorganised so as to provide coördinated clinical and systematic instruction in general surgery wards and specialised surgical units in Edinburgh. Fee £31 10s.

Applications for enrolment should be addressed to the Director of Post-Graduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and post-graduate experience.

THE MILROY LECTURES ON STATE MEDICINE AND PUBLIC HEALTH

The Council of the Royal College of Physicians of London are prepared to receive applications for the office of MILROY LECTURER for 1956.

Applications must be addressed to the Registrar, Royal College of Physicians, Pall Mall East, S.W.1, to reach the College on or before WEDNESDAY, 8TH SEPTEMBER, 1954, and to include a short synopsis of the subject selected by the candidate.

2 Lectures are to be given on a Tuesday and Thursday in February or March, 1956.

A copy of Dr. Milroy's "Suggestions" on the subject of his bequest, and information as to the emolument, may be obtained from the Registrar.

UNIVERSITY OF LONDON

GRANTS FOR RESEARCH

Applications are invited from members* of the University for grants from the Central Research Fund to assist specific projects of research and for the provision of special materials and apparatus. Grants are not made for normal maintenance.

Applications must next be received not later than 31ST AUGUST, 1954. Forms of application and further particulars may be obtained from the Secretary to the Central Research Funds Committee, University of London, Senate House, London, W.C.1.

* Members of the University are defined by Statute as the chancellor, the members for the time being of the Court and of the Senate respectively, the Professors and Readers and other Teachers of the University during their tenure of office, the graduates and the students.

BRITISH TUBERCULOSIS ASSOCIATION RESEARCH COMMITTEE. RESEARCH SCHOLAR required for a follow-up of tuberculous patients in industry. Full-time for 6 months in the first instance. Adequate experience in tuberculosis essential, acquaintance with social medicine desirable. Salary scale £900–£1400 p.a. commencing at a point appropriate to experience.

Apply before 7th August to the Honorary Secretary, British Tuberculosis Association Research Committee, 16, Grosvenor-place, S.W.1.

GUY'S HOSPITAL MEDICAL SCHOOL, S.E.1.

Applications are invited for an appointment of JUNIOR LECTURER IN PATHOLOGY commencing on 1st October, 1954. Candidates should be medically qualified and preference will be given to those with an Honours Degree in Physiology or some other basic medical science. Salary scale £900–£1100 with superannuation and family allowance.

Application should be made by 31st July, 1954, on a form obtainable from the Dean.

Applications are invited for an appointment of JUNIOR LECTURER IN BACTERIOLOGY commencing on 1st October, 1954, or earlier if possible. Salary scale £900–£1100 p.a. with superannuation and family allowance.

Application should be made by 24th July, 1954, on a form obtainable from the Dean.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL. A LECTURER IN APPLIED PHARMACOLOGY AND THERAPEUTICS is required by the Department of Therapeutics. Salary £700–£1100 p.a. (with family allowance) according to experience.

Applications, giving full particulars and the names of 2 referees, should be sent, before 6th September, to the Dean, St. Thomas's Hospital Medical School, London, S.E.1.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of Temporary ASSISTANT LECTURER in the Department of Anatomy, at a salary of £700 for Session 1954–55.

Applications, stating age, qualifications and experience, together with the names of 3 referees, should be received not later than 24th July, 1954, by the undersigned, from whom further particulars may be obtained.

STANLEY DUMBELL, Registrar.

THE UNIVERSITY OF MANCHESTER. Applications are invited for the post of ASSISTANT LECTURER or DEMONSTRATOR IN CHEMICAL PATHOLOGY. Candidates should hold a good Honours Degree in Chemistry or Biochemistry. Salary scale £450–£50–£550 p.a. with membership of F.S.S.U. and children's allowance scheme.

Applications should be sent, not later than 25th August, 1954, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for 2 MEDICAL OFFICERS to undertake the care of staff and students of the University College, University College Hospital, and Ibadan branch of the Nigerian College of Arts, Science, and Technology. Apart from general clinical experience the posts offer good opportunities for the investigation of health problems in well-controlled indigenous communities. Student Health Service for the students of both Colleges and nurses of the Teaching Hospital to be set up. Candidates must hold a medical qualification registrable in the U.K. and have had at least 5 years experience including usual junior hospital appointment. Consolidated salary £1200–£100–£2100 p.a. Point of entry will depend on qualifications and experience. Free first-class passages for medical officer and wife and assisted passages for children on appointment, annual leave, and repatriation. Part-furnished accommodation at University College or Nigerian College at rent not exceeding 7·7% of salary. Children's allowance: £50 p.a. per child for children resident in Nigeria (maximum £150 p.a.) or £100 p.a. per child for children resident elsewhere (maximum £300 p.a.). Superannuation. Fixed annual leave of 8 weeks to be taken normally between June and September.

Applications (10 copies), naming 3 referees and stating full qualifications and experience, to be received by 13th August by Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, W.C.1, from whom further particulars may be obtained.

Hospital Services : Senior Appointments

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time CONSULTANT PATHOLOGIST for the Wandsworth Hospitals Group Laboratory at St. James' Hospital, Balham, S.W.12. Candidates should have wide experience in bacteriology.

Applications (5 copies), giving date of birth, qualifications, experience and names of 3 referees, to Secretary (S.1.), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 14th August, 1954. Applicants may visit Laboratory by local arrangement.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(a) **Birmingham (Mental B) Group of hospitals**

Whole-time CONSULTANT PATHOLOGIST. Duties at Rubery Hill and Hollymoor Hospitals. Higher qualification an advantage. Special arrangements may be made for approved candidate to develop methods of investigation in Medical School of University of Birmingham in collaboration with Departments of Experimental Pathology and Psychiatry. Original work in physiological pathology of mental disorder encouraged.

(b) **Stoke-on-Trent Group of hospitals**

Whole-time CONSULTANT CHEST PHYSICIAN to assist in work of Pneumoconiosis Panel (6 notional half-days weekly); duties also at tuberculosis clinics and hospitals in Stoke-on-Trent area (5 notional half-days weekly). Wide experience pneumoconiosis work essential. Non-resident.

(c) **Birmingham (Selly Oak) Group of hospitals**

Whole-time CONSULTANT ANÆSTHETIST. Duties at Little Bromwich Hospital (158 general beds, to be subsequently increased to 476, plus 214 Beds for infectious diseases and poliomyelitis cases) and other Group hospitals.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 2nd August, 1954.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. DEPUTY DIRECTOR (whole-time) Regional Blood Transfusion Service. Major part (approximately two-thirds) of duties in the Regional Centre Laboratory at Brooklands-avenue, Cambridge—remainder on detachment duty at blood collecting sessions in the region. Salary scale £1500–£1950.

Applications (8 copies), stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 2nd August, 1954.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time CONSULTANT PSYCHIATRIST AND PHYSICIAN-SUPERINTENDENT for duties at Stanley Royd Hospital, Wakefield (2100 Beds). The successful candidate will have extra-mural duties at general hospitals in the Wakefield and Dewsbury areas. A house is available at the Hospital. Candidates should hold high qualifications in medicine and psychiatry and have had experience of administrative aspects of the specialty.

Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY PHYSICIAN-SUPERINTENDENT for duties at Menston Hospital, near Leeds (2500 Beds). The successful candidate will have extra-mural duties at associated general hospitals. An unfurnished family flat is available, if required, but residential accommodation is available for a single person. Candidates should hold high qualifications in medicine and psychiatry.

Whole-time ASSISTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (Senior Hospital Medical Officer scale) for duties at Meanwood Park Hospital, Leeds (700 Beds). The successful candidate may, subject to the direction of the Medical Superintendent, be required to visit other hospitals in the Region in connection with the Mental Deficiency Service. Residential accommodation for a married couple is available at the Hospital. Consideration will be given to applicants who wish to be non-resident.

Whole-time ASSISTANT PSYCHIATRISTS (Senior Hospital Medical Officer scale) for duties at the following mental hospitals, together with outpatient clinical duties at associated general hospitals :—

De la Pole Hospital, Willerby, near Hull (1100 Beds).
Menston Hospital, near Leeds (2500 Beds).
Stanley Royd Hospital, Wakefield (2000 Beds).

Further details with regard to the duties, accommodation available, &c., for the above appointments may be obtained from the Secretary to the Board.

Part-time CONSULTANT in Orthopædic Surgery (9 sessions per week) for duties at hospitals and clinics in the Dewsbury and Batley area. The person appointed to reside in or near Batley.

Whole-time ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer scale) in the Regional Radiotherapy Service for duties mainly at the Hull Centre under the supervision of the local and visiting Consultants. The Centre has approximately 1200 new cases annually, is equipped for deep and superficial X-ray therapy and radium treatment and is functionally associated with the Centre at the General Infirmary at Leeds. The person appointed to reside in Hull.

Whole-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer scale) for duties mainly concerned with refraction work at school clinics, together with hospital work at the Royal Eye and Ear Hospital, Bradford, and the Ripon and District Hospital. The person appointed to reside in Otley/Ilkley area.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 14th August, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time appointment of SENIOR CASUALTY OFFICER for duties at the Batley and Dewsbury General Hospitals. The person appointed to undertake duties in the Casualty Departments under the general supervision of the Consultant Orthopædic Surgeon in-charge, together with duties in the Orthopædic Department at the Batley General Hospital, and be resident in or near Batley. The salary will be within the range of £1500–£1950 p.a. and the tenure of appointment will be for a period not exceeding 4 years. The appointment will be superannuable and subject to terms and conditions of service as laid down by the Board which will be similar but not necessarily identical to the terms and conditions of service of hospital medical and dental staffs.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 14th August, 1954.

HEREFORDSHIRE GROUP OF HOSPITALS. Whole-time ASSISTANT PATHOLOGIST (£1500–£1950). Duties at Group laboratories under general direction of Group Pathologist. Higher qualification an advantage. Wide experience specialty required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 2nd August, 1954.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time resident post of CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT, Whittingham Hospital, near Preston (3031 Beds). All modern forms of treatment undertaken. Wide experience in psychiatry essential. Modern semi-detached family house available in hospital grounds. Further inquiries may be made of the Medical Superintendent.

Application forms from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, to be returned not later than 28th July, 1954.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT RADIOLOGIST, Barnet General Hospital, Wellhouse-lane, Barnet, Herts. (478 Beds.) Duties also at Victoria Maternity (48 Beds), St. Stephen's (88 Beds) and Potters Bar and District (57 Beds) hospitals. Salary £1500 (at age 32)–£1950.

Applications by 24th August, 1954.

(2) CONSULTANT PSYCHIATRIST, Hill End Hospital, St. Albans, Herts. (790 Beds.)

Applications by 2nd September, 1954.

(3) CONSULTANT CHILD PSYCHIATRIST, West Middlesex Hospital, Isleworth, Middlesex.

Applications by 2nd September, 1954.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for 2 posts of CONSULTANT PSYCHIATRISTS to the Pewsey Mental Deficiency Hospital and its ancillary premises (960 Beds). The posts will be whole-time or maximum part-time at the option of the successful candidates, who will be required to reside in Pewsey. Residential accommodation is available. 1 post is that of Physician-Superintendent. Candidates should indicate for which post they are applying. Candidates must hold the D.P.M. or equivalent, and be familiar with the statutory responsibilities prescribed by the M.D. Acts and Regulations. Candidates are invited to visit the hospitals by arrangement with the Secretary, Pewsey Hospital, Marlborough, Wilts.

Applications (12 copies), stating age, qualifications, experience, and names of 3 referees, to the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford (from whom further details can be obtained), to reach him by 30th July.

PLYMOUTH CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of LOCUM TENENS (preferably Senior Hospital Medical Officer) in Pathology to undertake whole-time duties based on the South Devon and East Cornwall Hospital, Plymouth from 26th July until 11th September, 1954, inclusive.

Applications, stating age, qualifications and experience, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT PATHOLOGIST (9 notional half-days a week) to the Eastbourne and Hailsham Groups of hospitals. The main laboratory is situated at the Princess Alice Memorial Hospital, Eastbourne, and duties in the Hailsham Group will be at Hellingly Hospital, Hailsham, Sussex. Candidates must have had wide experience in pathology and a higher University degree or membership of a Royal College of Physicians is desirable. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 31st July, 1954.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Locum Tenens PÆDIATRICIAN (9 half-days per week) in the Portsmouth Group of hospitals, from 25th August to 11th September. Remuneration will be at the rate of 45 guineas weekly, if holding National Health Service Consultant grading, or 31½ guineas.

Applications to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT RADIOTHERAPIST to the Radiotherapy Centre at Derbyshire Royal Infirmary. The successful candidate will work under the direction of the Consultant Radiotherapist-in-charge. Candidates should have a good clinical background and be in possession of the D.M.R.T. Salary scale £1500–£50–£1950.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 14th August, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SENIOR CASUALTY OFFICER at the Grimsby General Hospital. Salary within the range of £1500–£1950. Tenure for a period not exceeding 4 years.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th August, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT VENEREOLOGIST for Centres in Doncaster, Rotherham and Sheffield. The successful candidate will work under the supervision of the Area Consultant, and will be required to live within 10 miles of Doncaster, where approximately half the sessions will be undertaken. Salary scale £1500–£50–£1950 p.a.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 6th August, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT ANÆSTHETIST for the Moorgate General Hospital, Rotherham, with duties in other hospitals in the Group. Candidates should be in possession of the D.A. Salary scale £1500–£50–£1950 p.a.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 6th August, 1954.

WEST CORNWALL CLINICAL AREA. South-Western REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of Locum Tenens SENIOR HOSPITAL MEDICAL OFFICERS in Anæsthetics to undertake the following whole-time duties :—

At Penzance from 9th August until 12th September, 1954, inclusive.

At Falmouth from 8th August until 4th September, 1954, inclusive.

Applications, stating age, qualifications and experience, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8.

WELSH REGIONAL HOSPITAL BOARD.

CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST to serve the Mid Wales Hospital Management Committee. Candidates should preferably have had experience in general surgery. Further details obtainable from Senior Administrative Medical Officer. Optional whole-time or maximum part-time appointment.

Part-time VENEREOLOGIST (Senior Hospital Medical Officer scale) Wrexham, Powys and Mawddach Hospital Management Committee Area. 3 sessions a week.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT ANÆSTHETIST required, Merthyr area, 1st–28th August.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

IRELAND. ST. JOHN OF GOD PRIVATE PSYCHIATRIC HOSPITAL, STILLORGAN, CO. DUBLIN, IRELAND. (Conducted by Brothers of St. John of God. Hospital contains 135 Beds.) Applications are invited for the position of RESIDENT MEDICAL DIRECTOR at above Hospital. Candidates should be of Consultant status and possess the highest qualifications.

Application forms with particulars sent on request. Completed forms to be returned not later than 31st August, 1954, to Brother Secretary, St. John of God Private Psychiatric Hospital, Stillorgan, co. Dublin, Ireland.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a post as CONSULTANT PHYSICIAN at the Royal Victoria Hospital, Belfast. The terms and conditions of the appointment will be in accordance with the Authority's application of the Spens Report to Northern Ireland.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and will be received not later than 16th August, 1954.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a post as CONSULTANT SURGEON at hospitals managed by the South Belfast Hospital Management Committee. The appointment will be on a part-time basis of 7 half-days of duty weekly, and the terms and conditions will be in accordance with the Authority's application of the Spens Report to Northern Ireland.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and will be received not later than 14th August, 1954.

SOUTH AFRICAN BLOOD TRANSFUSION SERVICE. Applications are invited from registered medical practitioners with experience in blood-transfusion and bacteriology for the position of SEROLOGIST of the South African Blood Transfusion Service. The appointment will be made on the salary scale £1700–£100–£2400 p.a., but in determining the commencing salary cognisance may be taken of previous experience and special qualification. The successful applicant will be expected to assume duty in Johannesburg on 1st November, 1954. Membership of the Service's Staff Provident Fund is a condition of employment.

Applications, stating full details of age, qualifications, experience, marital status, &c., should be submitted in writing to the Secretary, South African Blood Transfusion Service, P.O. Box 9326, Johannesburg, so as to be received not later than 15th August, 1954. The Medical Director of the Service will be in London early in September, 1954, to interview applicants at a time and place to be advised.

Hospital Services : Junior Appointments

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required for Orthopædic Department. Pre-registration applicants will be considered. Appointment for 6 months from 16th August.

Applications, with copies of 2 testimonials, to Medical Director by 24th July, 1954.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology required at above Hospital. Resident when on duty. Post recognised for M.R.C.O.G. The department consists of 84 obstetrical beds and 50 gynæcological beds and a large Out-patient Department. Post vacant 24th November, 1954. Applicants may visit the Hospital by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 28th July, 1954.

ARCHWAY GROUP HOSPITAL MANAGEMENT COMMITTEE. ISLINGTON CHEST CLINIC. REGISTRAR (full-time) required for recently opened Chest Clinic and Tuberculosis Unit of 48 Beds at Whittington Hospital. Previous experience in treatment and diagnosis of tuberculosis essential. Post vacant 1st October. Clinic and Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, 46, Cholmeley-park, Highgate, N.6, by 31st July.

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. HOUSE PHYSICIAN (resident or non-resident), vacant mid-August, 1954.

Apply Hospital Secretary, enclosing copies of 2 recent testimonials

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. Locum HOUSE PHYSICIAN (resident or non-resident). From 30th July for 2 or 3 weeks.

Apply Hospital Secretary (Phone BATtersea 0134).

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL AND THE SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for appointment as SENIOR REGISTRAR (first year), commencing 1st October, 1954, at the above post-graduate teaching hospital, with which is associated the Institute of Psychiatry (University of London). The successful candidate, subject to his qualifying for annual renewal, will serve his first 2 years at the Bethlem Royal Hospital and the Maudsley Hospital, and his remaining 2 years at Hellingly Hospital at Hailsham, Sussex. Candidates should have a higher medical qualification, and experience in psychiatry is essential. Opportunities for research are available.

Applications, giving details of experience and the names of 3 referees, should be made within 2 weeks of the appearance of this advertisement on a form obtainable from K. J. JOHNSON (Hy), House Governor and Secretary, Maudsley Hospital, Denmark Hill, London, S.E.5.

COLINDALE HOSPITAL, Colindale-avenue, Hendon, London, N.W.9. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time MEDICAL REGISTRAR (resident or non-resident) required at above Hospital, which accommodates 300 tuberculous patients. Experience in diseases of the chest desirable. Hospital may be visited by direct appointment with the Physician-Superintendent.

Application forms obtainable from, and returnable to, the Group Secretary, Edgware General Hospital, Edgware, by 24th July, 1954.

EASTERN HOSPITAL (Fevers), London, E.9. House OFFICER (third post). Duties may include some work in Chest Unit. Facilities for postgraduate study for higher qualifications.

Applications, with testimonials, to Group Secretary, Hackney Hospital, E.9, quoting EH/HO.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of Full-time SURGICAL REGISTRAR (non-resident). Appointment for 1 year in the first instance, to commence 1st October, 1954. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 7th August, 1954.

FOREST GATE HOSPITAL, Forest-lane, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st September, 1954. The appointment is recognised for the training of candidates for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 24th July, 1954.

GUY'S HOSPITAL, S.E.1. Applications are invited for 2 posts of REGISTRAR in the Ophthalmic Department to Guy's Hospital with attendance on 2 sessions per week or 1 post with attendance on 4 sessions per week. Duties to start as soon as possible with appointment until 30th September, 1955.

Forms of application are obtainable from and should be lodged with the Superintendent, Guy's Hospital, S.E.1, not later than 24th July, 1954.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry (5 half-days a week) Ealing Child Guidance Clinic, 42, Madeley-road, W.5. Appointment for 1 year in first instance. Clinic may be visited by appointment with Medical Director.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 30th July, 1954.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. Whole-time REGISTRAR (resident Surgical Officer) vacant on 1st September, 1954. Experience in general surgery essential and holding of F.R.C.S. an advantage. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 27th July, 1954.

KING EDWARD MEMORIAL HOSPITAL, Ealing, and CLAYPONDS HOSPITAL, SOUTH EALING. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE SURGEON required mainly for E.N.T. duties but with some general work at King Edward Memorial Hospital and Clayponds Hospital. Resident at Clayponds Hospital.

Apply in writing, stating age, nationality, qualifications with dates, and previous experience, together with names of 2 referees, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 27th July, 1954.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications invited for RESIDENT CASUALTY OFFICER from 6th August, 1954 (Senior House Officer or House Officer). Grade according to experience. Recognised for the F.R.C.S.

Application forms from the Physician-Superintendent.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. RESIDENT HOUSE SURGEON required at the Hospital's Country Branch, near Hitchin and Letchworth, Herts. The post is graded as Senior House Officer and the appointment, which provides excellent opportunities for experience in thoracic surgery, is for 6 months.

Applications from registered medical practitioners, stating age, qualifications with dates and previous appointments held, with copies of 3 testimonials, should be sent at once to—

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st August, 1954, for RESIDENT HOUSE PHYSICIAN. Appointment for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and post is graded as House Officer. Duties include work in the Outpatient Department, and refill clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned at once.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Radiodiagnostic Department becoming vacant on 1st October, 1954. A higher qualification, although desirable, is not essential.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 9th August, 1954. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1, AND THE NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR to the Department of Psychiatry. Candidates must be Members of the Royal College of Physicians, London. The appointment will be for 1 year, renewable for a maximum of 4. The first 2 years will be spent at the London Hospital—1, or both, of the succeeding years will be spent at Claybury or St. Clement's Hospitals.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 4th August, 1954. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for a Temporary Part-time SENIOR REGISTRAR to the Skin Department. Candidates must be Members of the Royal College of Physicians, London. The appointment will be for 1 year and the successful candidate would be required to attend on 4 half-days per week.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 31st July, 1954. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Physical Medicine becoming vacant on 14th September, 1954.

Applications (6 copies), together with 6 copies of 3 recent testimonials, should reach the House Governor by 26th July, 1954. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Department of Venereal Diseases becoming vacant on 19th October, 1954.

Applications (12 copies), giving full particulars, and the names and addresses of 3 referees, should be received by the House Governor by 1st September, 1954.

H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to Department of Venereal Diseases becoming vacant on 1st October, 1954.

Applications (6 copies), giving full particulars, together with 6 copies of 3 recent testimonials, should be received by the House Governor by 4th August, 1954.

H. BRIERLEY, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) HOUSE PHYSICIAN (pre-registration or first, second, or third) required for 6 months commencing 3rd August, 1954.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy), vacant 1st August, 1954.

Applications, with copies of testimonials, to the Medical Director.

POPLAR HOSPITAL, East India Dock-road, E.14. Bow GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required at above Hospital. Duties are mainly in connection with the Receiving-room and Casualty Departments. Preference will be given to a candidate who is preparing for a higher qualification.

Applications to Group Secretary, 2A, Bow-road, E.3.

REGIONAL NEUROSURGICAL CENTRE. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery), vacant 1st August. The post, which is recognised for F.R.C.S., also provides excellent opportunity for training in neurology. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months from 1st September, 1954, with duties at the North Western Branch and Hampstead General Hospital. Salary in accordance with the Ministry of Health scale for Senior House Officers.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 30th July, 1954.

ROYAL FREE HOSPITAL. Applications are invited for the post of JUNIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months, duties to commence on 1st September, 1954. Salary in accordance with the Ministry of Health scale for House Officers.

Application forms should be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 30th July, 1954.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. (279 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR (second) required at above Hospital. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Royal Northern Hospital, N.7, by 28th July, 1954.

SOUTH WESTERN HOSPITAL, Landor-road, S.W.9. RESIDENT HOUSE OFFICER (Senior House Officer grade) required to take charge of 32 surgical beds under the direction of the Surgical Consultant of Lambeth Hospital, Kennington; and also to work under the E.N.T. Consultant at the South Western Hospital.

Form of application from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11.

ST. ANN'S GENERAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months commencing 6th September, 1954.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, Tottenham, N.15, to be returned by 31st July, 1954.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (pre- or post-registration). Post vacant 15th August, 1954. Tenable for 6 months. Salary, &c., in accordance with national scale.

Application forms obtainable from and returnable to the Medical Superintendent.

ST. GILES' HOSPITAL, Camberwell, London, S.E.5. Applications invited for appointment as SENIOR HOUSE OFFICER (Anæsthetist). Recognised for D.A. and F.F.A.R.C.S. Vacant from 1st August.

Applications, showing age, qualifications and previous posts, enclosing copy testimonials or names of referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

ST. MARY ABBOTS HOSPITAL, Marloes-road, Kensing-ton, W.8. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of REGISTRAR in Anæsthetics based at above Hospital which will be for 1 year in the first instance. Post recognised for the D.A. Vacant 8th September, 1954. Candidates may visit Hospital by arrangement.

Applications (5 copies to be completed) to be submitted by 26th July, 1954, on forms obtainable from the Group Secretary (16.L), Fulham and Kensington Hospital Management Committee, 5, Collingham-gardens, London, S.W.5.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of RESIDENT MEDICAL SUPERINTENDENT, graded Junior Hospital Medical Officer (the Senior Resident Medical Officer of the Hospital). The appointment is for a first period of 12 months, with effect from 1st October, 1954, and the holder is eligible for re-appointment for a second and third term. The holder of this appointment is entitled to retain fees in respect of General Practitioner's Services, given to members of the Staff who are on the Medical Superintendent's "List."

Applications, stating nationality, date of birth, permanent address, qualifications and date of registration, details of previous appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 30th July, 1954.

ST. MARY'S HOSPITAL CHILDREN'S DEPARTMENT, PRINCESS LOUISE (KENSINGTON) HOSPITAL FOR CHILDREN, St. Quintin-avenue, London, W.10. HOUSE OFFICERS (2) required (second or third post). Pre-registration candidates considered.

Vacant 1st September, 1954, as follows :—

(*a*) Medical and surgical beds.

(*b*) E.N.T. beds and casualty.

Recognised for the D.C.H.

Applications, with 3 testimonials, to undersigned not later than 24th July, 1954. A. C. YOUNG, Secretary.

ST. JAMES' HOSPITAL, Sarsfeld-road, S.W.12. WANDSWORTH HOSPITAL GROUP. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Post of REGISTRAR vacant in E.N.T. Department.

Application forms (send stamped addressed foolscap envelope) obtainable from Group Secretary, 14, Atkins-road, Balham, S.W.12, to be completed and returned by 26th July.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in the Anæsthetics Department for 1 year from 1st September, 1954.

Applications, with names of 2 referees, to the Administrator and Secretary by 30th July, 1954.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. Whole-time RESIDENT SENIOR HOUSE OFFICER (anæsthetics) required mid-August.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 24th July.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR HOUSE OFFICER (resident) to Clinical Pathology Department for 1 year from 16th August, 1954.

Applications (5 copies), with names of 2 referees, to House Governor by 28th July.

WHITTINGTON HOSPITAL, Highgate Hill, N.19. Senior HOUSE OFFICER (resident) required for E.N.T. Department. Post recognised for D.L.O., vacant 1st September.

Detailed applications, together with copies of 2 testimonials and name of 1 referee, to Medical Superintendent by 26th July.

WHITTINGTON HOSPITAL, Highgate Hill, N.19. SURGICAL REGISTRAR required for Unit of 87 Beds for general surgery and urology. Post recognised for F.R.C.S. Vacant 1st October, 1954. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, Highgate, N.6, by 31st July, 1954.

ACCRINGTON VICTORIA HOSPITAL. (112 acute beds.) Required :—

SENIOR HOUSE OFFICER (medicine).

HOUSE SURGEON. Post recognised for pre-registration purposes and for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

ARLESEY, BEDFORDSHIRE. THREE COUNTIES HOSPITAL. (Mental—1350 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry (resident or non-resident). All forms of treatment carried out and outpatient clinics held at the local general hospitals. Facilities for research work and for attendance at D.P.M. and other courses in London. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Medical Superintendent, Three Counties Hospital, Arlesey, Beds, by 28th July, 1954.

ASCOT. HEATHERWOOD ORTHOPÆDIC HOSPITAL. (212 Beds, Adults and Children.) Applications invited for post of ORTHOPÆDIC HOUSE SURGEON (resident). Post recognised for F.R.C.S. and is tenable for 6 months.

Applications to Hospital Secretary.

ASHFORD HOSPITAL, Ashford, Kent. Applications are invited for the appointment of HOUSE PHYSICIAN which will become vacant on 28th July, 1954, at the above Hospital, and is recognised for Pre-registration Service. Salary £425, £475 or £525 a year, less a deduction of £125 a year for residential emoluments.

Applications, stating age, qualifications, experience, and the names and addresses of 2 referees, should be made to the Group Secretary, South-East Kent Hospital Management Committee, "Ash-Eton," Radnor Park West, Folkestone.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from newly qualified medical practitioners seeking pre-registration posts under the Medical Act, 1950, for the resident post of HOUSE SURGEON at the above Hospital. Busy General Hospital. Salary on national scale, less deduction for board and lodging.

Applications, with 2 testimonials, to the Group Secretary, Mid-Wales Hospital Management Committee, General Hospital, Aberystwyth, immediately.

BARNSLEY. BECKETT HOSPITAL. (182 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR required. Single accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of CASUALTY OFFICER (Orthopædic Assistant) of Junior Hospital Medical Officer status, at the above Hospital. Resident or non-resident. Applicants must have been qualified 2 years. Post tenable for 4 years, but may be renewed at end of period. Previous surgical and/or orthopædic experience desirable.

Applications to the Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (207 general beds.) Locum HOUSE PHYSICIAN required at above Hospital for the fortnight 26th July–8th August, 1954. Senior House Officer grading. Salary £13 a week. Residential accommodation available at the Hospital.

Applications to Group Secretary.

BEDFORD GENERAL HOSPITAL. (437 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required for busy acute Orthopædic and Traumatic Department at above Hospital. Previous orthopædic experience desirable. Candidates may visit Hospital by appointment with Group Secretary.

Application forms obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, as soon as possible.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE SURGEON (pre-registration) required immediately. The appointment offers exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Senior HOUSE OFFICER (Male or Female) in Gynæcology and Obstetrics required to be resident at the Bedford General Hospital. The unit comprises 23 gynæcological and 58 obstetric beds and a busy Outpatient Department, offering excellent experience. Post vacant 21st September, 1954, and recognised for the D.Obst.R.C.O.G. Salary £745 p.a., less £155 for residential accommodation.

Application forms obtainable from and returnable to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 24th July, 1954.

BIRKENHEAD. ST. CATHERINE'S HOSPITAL. (459 bedded general Hospital.) BIRKENHEAD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics. Post approved for D.A. examination. Tenable from 1st October.

Apply, stating age, qualifications, experience with copies of 2 testimonials, to Secretary above Committee, St. James' Hospital, Birkenhead.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (215 Beds.)

RESIDENT HOUSE SURGEONS (Male or Female). These posts are vacant immediately and are recognised by the Royal College of Surgeons for the casualty surgery training, now compulsory for the Fellowship examinations. Appointments will be for a period of 6 months in the General Accident Service and may (at the applicant's request) include a period in the 32-bedded Burns Unit.

Applications to Administrator.

RESIDENT ANÆSTHETIST (Senior House Officer grade). Vacancy occurs in August for the above interesting post.

Applications, with full details naming 2 referees, to Administrator.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. PÆDIATRIC HOUSE PHYSICIAN (Male or Female). Post vacant 1st September, 1954. Recognised for the D.C.H., includes duties in the infectious diseases wards and at Neonatal Department and Clinics.

Applications to Physician-Superintendent.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Wolverhampton Group Hospital Management Committee, The Royal Hospital, Wolverhampton

(*a*) RESIDENT SURGICAL REGISTRAR for New Cross Hospital (636 Beds) with some duties at The Royal Hospital (310 Beds), preferably F.R.C.S. Vacant now.

(*b*) REGISTRAR in Diagnostic Radiology for The Royal Hospital. Vacant now. At least Part 1 of Diploma of Medical Radiology essential. Duties also at other Group Hospitals.

(*c*) CASUALTY OFFICER (Registrar) for The Royal Hospital. Hospital recognised for F.R.C.S. Resident.

Application forms from Group Secretary, to be returned before 2nd August. Candidates may visit Hospital.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Whole-time JUNIOR HOSPITAL MEDICAL OFFICER to the Birmingham Regional Blood Transfusion Centre ; duties mainly in Blood Transfusion Service Laboratory. Knowledge hæmato-serology, hæmatology, and bacteriology an advantage ; appointment offers full training facilities in the subject. Opportunity for research and clinical experience. Successful candidate required to assist at Blood Donor sessions.

(2) Birmingham Regional Blood Transfusion Service require 2 part-time registered Medical Practitioners (each undertaking 4 notional half-days weekly). Duties attending Blood Donor sessions in or outside Birmingham possibly at week-ends. Remuneration £175 per session per annum.

Applications (10 copies), naming 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 2nd August, 1954. Candidates may visit the Laboratory at No. 15, Ampton-road, Birmingham, 15, after appointment with Director.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE GENERAL HOSPITAL. Applications are invited for the post of NON-RESIDENT SENIOR HOUSE OFFICER for duty in the Casualty Department at the above Hospital. The post is vacant 1st October, 1954, and is tenable for 1 year. Candidates must be registered medical practitioners, and have held a resident appointment.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 7th August.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade) for duties within the Teaching Group, and resident at the Queen Elizabeth Hospital, vacant 1st October and tenable for 1 year. The appointment is a recognised post for the purpose of taking the F.F.A.R.C.S. examination.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 7th August, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of SENIOR HOUSE OFFICER (E.N.T. Department), non-resident, for duties within the constituent hospitals of the teaching group. The post is vacant 1st October, 1954, and is tenable for 1 year. Some previous experience in the specialty desirable.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned not later than 7th August, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of CLINICAL PATHOLOGIST (non-resident, Senior House Officer grade), in the Department of Bacteriology and Clinical Pathology. Previous experience in clinical pathology is not essential but applicants should have had hospital postgraduate experience. The appointment is tenable for 1 year. Further particulars can be obtained from the Director of Clinical Pathological Services.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BISHOP AUCKLAND GENERAL HOSPITAL. (350 Beds.) Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE SURGEON (obstetrics and gynæcology) available mid-August; departmental beddage 66; appointment recognised for D.Obst. R.C.O.G. Salary £425–£525 p.a. according to previous posts held, less £125 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, to be sent, with names of 2 referees, to the undersigned as soon as possible.

K. G. T. LUXFORD, Group Secretary/Finance Officer,
South West Durham Hospital Management Committee.
The General Hospital, Bishop Auckland.

BLACKBURN ROYAL INFIRMARY. (262 acute beds.) JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics and casualty) required. Post is of limited tenure of up to 4 years and is recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, WEST-BOURNE, HANTS. Applications are invited for the appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties, vacant 18th July, 1954. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Bournemouth and Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas but not for pre-registration purposes.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (non-resident), orthopædic and casualty combined. The post which becomes vacant on 3rd August and is tenable for 12 months is recognised for the F.R.C.S. examination.

Applications to the Deputy Hospital Secretary.

BRADFORD. ST. LUKE'S HOSPITAL.

RESIDENT SENIOR HOUSE OFFICER (medicine and pathology), vacant 1st August.

SENIOR HOUSE OFFICER (anæsthetics), vacant 1st September. Recognised for D.A. and F.F.A.R.C.S. Opportunities for plastic and intra-thoracic experience.

Salary for either of above posts £745 p.a., less residential emoluments.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. SENIOR HOUSE OFFICER for Surgical Tuberculosis Department at above Hospital. Recognised for F.R.C.S. Duties mainly concerned with genito-urinary tuberculosis, including 1 day a week at the London Hospital Genito-urinary Department.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) Applications are invited for the post of CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit. Pre-registration and recognised for F.R.C.S. Vacant mid-July.

Applications, stating age, qualifications and experience, naming 2 referees, to be sent to the Administrative Officer.

BRISTOL. WINFORD ORTHOPÆDIC HOSPITAL. (230 Beds) Applications are invited from registered medical practitioners to fill immediate vacancy of SENIOR HOUSE OFFICER. Appointment suitable for candidate reading for a higher grade qualification and is recognised for the F.R.C.S. Hospital is staffed by Consultants of teaching hospital. Unfurnished house available in late August for married applicant.

Apply, stating age, qualifications and experience, with testimonials, to Secretary.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the regional Neurosurgery Department, vacant 1st August, 1954. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. THORACIC SURGERY DEPARTMENT. HOUSE SURGEON required in the above Department, which is the regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. HAM GREEN HOSPITAL, Pill, near Bristol. Applications are invited for the post of HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. UNITED BRISTOL HOSPITALS. South-WESTERN REGIONAL HOSPITAL BOARD. REGISTRARS in Diagnostic Radiology. Applications are invited for 2 half-time Registrarships to the above Boards. These posts are intended as training posts and are open to candidates accepted for the University of Bristol Course in Diagnostic Radiology. This 2-year course (the fee for the whole 2 years is £52 10s.) is half-time so as to be integrated with the Registrarships. The appointments are available for 1 year in the first instance from 1st October, 1954, and are renewable for a second year. The appointments will be subject to the terms and conditions of service of hospital medical staff negotiated between the Minister and the Profession. Any further information concerning the Registrarships or Course may be obtained from the Director of Radiology, Bristol Royal Infirmary.

Applications, stating age, qualifications, and experience and giving the names of 2 referees, should be sent not later than 31st July, 1954, to the Secretary to the Board, Royal Infirmary Branch, Bristol 2.

BROMSGROVE. REGIONAL THORACIC SURGICAL CENTRE, HILL TOP HOSPITAL. MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER. Post vacant 1st September. All aspects of thoracic surgery dealt with, including cardiac, pulmonary, alimentary and children's diseases. Salary £745 p.a.

Applications, with the names of 3 referees, to the Group Secretary, Mid-Worcestershire Hospital Management Committee, Birmingham-road, Bromsgrove.

BROXBURN, WEST LOTHIAN. BANGOUR GENERAL HOSPITAL. TUBERCULOSIS UNIT. Applications are invited for the appointment of SENIOR HOUSE OFFICER in the Tuberculosis Unit at Bangour General Hospital, Broxburn, which is 15 miles from Edinburgh. The Unit contains 200 Beds for treatment of all forms of tuberculosis, including meningitis. Thoracic and orthopædic surgery. Salary and conditions of service will be in accordance with the regulations.

Applications, giving age, qualifications, and particulars of previous experience, should be lodged, with the Medical Superintendent, Bangour General Hospital, Broxburn, West Lothian.

BROXBURN, WEST LOTHIAN. BANGOUR GENERAL HOSPITAL. TUBERCULOSIS UNIT. Applications are invited for the appointment of a HOUSE OFFICER in the Tuberculosis Unit at Bangour General Hospital, Broxburn, which is 15 miles from Edinburgh. The Unit contains 200 Beds for treatment of all forms of tuberculosis, including meningitis. Thoracic and orthopædic surgery. Salary and conditions of service will be in accordance with the regulations.

Applications, giving age, qualifications, and particulars of previous experience, should be lodged with the Medical Superintendent, Bangour General Hospital, Broxburn, West Lothian.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Bury General Hospital

SENIOR HOUSE OFFICER (anæsthetics), resident or non-resident. Recognised for D.A.

Applications, stating experience, qualifications, &c., with names of 2 referees, should be made to—

H. WILKINSON, Esq., Group Secretary.
Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL.

SENIOR HOUSE OFFICER (medical).

SENIOR HOUSE OFFICER (surgical).

Resident or non-resident at the above Hospital.

Applications, giving names of 2 referees, should be made to—

H. WILKINSON, Esq., Group Secretary.
Bury General Hospital, Bury, Lancs.

CARLISLE. CITY MATERNITY HOSPITAL (57 Beds), AND CITY GENERAL HOSPITAL (146 Beds). HOUSE OFFICER (obstetrics and gynæcology) required. Pre-registration candidates are eligible to apply.

Apply, with names for reference, to the Secretary.

CARLISLE. GARLANDS HOSPITAL. Garlands Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER at the above Mental Hospital. Salary will be £745 p.a. Flat is available for which a deduction will be made. A course of study for Part 1 of the D.P.M. is held at Newcastle upon Tyne and arrangements would be made for successful candidate to attend this. Appointment is subject to the National Health Service superannuation regulations and to the conditions and terms of service laid down by the Minister of Health.

Applications, stating age, qualifications and experience and the names of 2 referees, should be sent to the Medical Superintendent as soon as possible.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required immediately at Barry Accident and Surgical Hospital. Staffed by whole-time Consultant Surgeon and Senior Casualty Officer. Excellent experience given in general surgery.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS required at Orthopædic Centre for South Wales at New Prince of Wales Orthopædic Hospital, Rhydlafar, near Cardiff, of 222 Beds (being extended to 292 Beds) plus 70 at country branch. Outpatients branch in Cardiff. Accommodation for single officers.

Application form from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ST. DAVID'S HOSPITAL. (656 Beds.) CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident or non-resident) required immediately for Geriatric Unit (200 Beds).

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (840 Beds.) Whole-time ANÆSTHETIC REGISTRAR. The surgical practice of the Hospital includes emergency, orthopædic, E.N.T. and general surgery, and there is a special Surgical Unit in association with the Hospital for Sick Children, Great Ormond-street. The post is very suitable for a lady or gentleman reading for the D.A. or F.F.A.R.C.S. examinations. Applicants are invited to visit the Hospital (which is within easy reach of Central London) by appointment.

Applications, on forms obtainable from the Group Secretary, should be submitted by 24th July, 1954.

CALDY MANOR HOSPITAL, Caldy, Wirral. (Special Hospital of 50 Beds for Diseases of the Heart.) Applications are invited from qualified and registered medical practitioners for the appointment of HOUSE PHYSICIAN for a 6-month period from 1st October, 1954. Salary £525 p.a., less £125 p.a. for board, &c. Terms and conditions of service are in accordance with regulations of the Ministry of Health. Caldy Manor Hospital is situated in pleasant surroundings overlooking the mouth of the River Dee and is within easy reach of Liverpool and North Wales. The appointment offers ample opportunity to a practitioner studying for a higher qualification.

Applications, giving full particulars of age, nationality, qualifications and experience, with names and addresses of 3 referees, to be forwarded to the Group Secretary, Mill Lane Hospital, Wallasey, Cheshire.

CHELTENHAM GENERAL AND EYE HOSPITAL. (170 Beds.) RESIDENT SENIOR HOUSE OFFICER (casualty) required.

Applications, giving details of qualifications and experience and names of 3 referees, to the Group Secretary, Sandford-road, Cheltenham.

CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER in Pathology. The successful applicant will work in the Group Laboratory at the Cheltenham General Hospital. Salary in accordance with Whitley Council terms and conditions of service. The post is tenable for 1 year in the first instance.

Applications, with the names of 3 referees, to be forwarded to the undersigned forthwith stating age, qualifications and experience. STANLEY T. DAVIS, Group Secretary.

General Hospital, Cheltenham.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) Required, Locum CASUALTY OFFICER (Senior House Officer) from 3rd to 14th August, 1954. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, should be sent to the Physician-Superintendent as soon as possible.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-SEA. (58 Beds.) REGISTRAR (Resident Casualty Officer) required temporarily during summer months to mid-September.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-SEA. (58 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. ESSEX COUNTY HOSPITAL, COLCHESTER (19 gynæcological beds), COLCHESTER MATERNITY HOSPITAL (22 obstetric beds). HOUSE OFFICER (Male or Female), obstetric and gynæcological. First, second, third or pre-registration post; tenable for 6 months.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, 14, Pope's-lane, Colchester. Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. BLACK NOTLEY HOSPITAL, BRAINTREE, AND ESSEX COUNTY HOSPITAL, COLCHESTER. Applications invited for post of HOUSE SURGEON (first, second, third or pre-registration post) tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S. Salary as scale plus £50 p.a.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CHESTERFIELD. SCARSDALE HOSPITAL. 2 Obstetri-CAL AND GYNÆCOLOGICAL SENIOR HOUSE OFFICERS required 1st October and 1st November next at above Hospital, which contains a Maternity Unit of 72 Beds. The obstetrical post is recognised for M.R.C.O.G. and D.Obst.R.C.O.G., and the gynæcological post for the M.R.C.O.G. only. National salary and conditions.

Apply in detail to—

M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.

CHESTERFIELD HOSPITAL MANAGEMENT COM-MITTEE. Whole-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients) and Scarsdale Hospital, Chesterfield. Salary scale now £775–£50–£1075 p.a.

Apply, M. H. BOONE, Secretary, at Chesterfield Royal Hospital.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) HOUSE SURGEON required immediately. Post is recognised for Pre-registration Service. Salary £425, £475, or £525 p.a., according to experience, less £125 p.a. for residential emoluments.

Please apply in detail to M. H. BOONE, Secretary, Chesterfield Hospital Management Committee, from whom particulars of the Hospital are obtainable.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) RESIDENT CASUALTY OFFICER (pre-registration grade, or Senior House Officer if person appointed has sufficient experience), required at above Hospital immediately. National salary and conditions. The Casualty Department includes 2 Junior and 1 Senior Casualty Officers, and the post is recognised for F.R.C.S. training. Duties are primarily in the Casualty Department, but by mutual arrangement 1 Casualty Officer performs duties in the Accident and Orthopædic Department, so that opportunities occur for all 3 officers to gain experience in that specialty.

Apply in detail, with copies of recent testimonials, to—

M. H. BOONE, Secretary.
Chesterfield Hospital Management Committee.

CROYDON GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (whole-time) for Group required immediately. Duties mainly at Croydon General Hospital (200 Beds) and Mayday Hospital (618 Beds). Candidates must have experience in anæsthetics and possession of D.A. an advantage. Both Hospitals recognised for F.F.A.R.C.S. and D.A.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer grade). Applications are invited for post which is now vacant. Recognised for Final F.R.C.S. examination. Particularly good for gaining experience in orthopædics and fracture work.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

CROYDON. ST. MARY'S MATERNITY HOSPITAL. (33 Beds.) SENIOR HOUSE OFFICER (resident). Post, which is recognised for D.Obst.R.C.O.G., vacant from 18th July. Candidate required to undertake certain duties at Mayday Hospital. Post offers opportunity for reading.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Croydon Group Hospital Management Committee, General Hospital, Croydon.

DARLINGTON MEMORIAL HOSPITAL AND HUNDER-UNIT. (307 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T. Department). Post registered for the D.L.O. Vacant 1st August, 1954.

Apply to the undersigned by not later than 24th July, 1954.

G. W. BECKWITH, Group Secretary.

DERBY. CITY HOSPITAL. House Physician (pre-registration) or SENIOR HOUSE OFFICER, vacant 19th July. The work is half pædiatric and half adult.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER, vacant now. Recognised for D.C.H.

Applications, with 2 names for reference, should be sent to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) SENIOR HOUSE OFFICER (pædiatrics), vacant 23rd July. Post recognised for D.C.H.

Applications, with 2 names for reference, should be sent to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 20th August.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

DERBY. DERWENT HOSPITAL. (187 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (chest and infectious diseases) required. Private quarters available. A Consultant Thoracic Surgeon attends this Hospital each week. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DORKING GENERAL HOSPITAL, Horsham-road, Dork-ING. (234 Beds,) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical), vacant 1st August, 1954. Excellent general surgical experience.

Apply to the Medical Superintendent.

DOVERCOURT. HARWICH AND DISTRICT HOS-PITAL. (30 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of SENIOR HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Salary £745 a year. A deduction of £150 a year will be made for residential emoluments.

Applications, stating age, qualifications and the names and addresses of 2 referees, to the Group Secretary, " Ash-Eton," Radnor Park West, Folkestone.

DEWSBURY. THE GENERAL HOSPITAL. (128 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgery and casualty). Salary £745 p.a., less deduction for board, lodging, &c.

Applications, stating age, qualifications, details of present and previous appointments, together with the names of 2 referees, should be sent immediately to the Administrative Officer, The General Hospital, Dewsbury, Yorks, quoting reference (L).

DONCASTER ROYAL INFIRMARY. Doncaster Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of ORTHOPÆDIC HOUSE SURGEON at above Infirmary in the grade of Senior House Officer. Salary at the rate of £745 p.a. from which a deduction of £145 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for F.R.C.S.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SECOND CASUALTY OFFICER (Senior House Officer) at above Infirmary. Salary £745 p.a., from which a deduction at the rete of £145 p.a. will be made for residential emoluments.

Applications, stating age, qualifications and details of present and previous appointments with dates, and enclosing copies of 3 recent testimonials, should be forwarded to—

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners, for following appointments :—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

SENIOR HOUSE OFFICER (Anæsthetist). Post vacant July.

SENIOR HOUSE OFFICER (surgical). Post vacant end July.

HOUSE OFFICER (surgical), pre-registration, vacant July.

Corbett Hospital, Stourbridge (106 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident). Anæsthetist. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

Prestwood Sanatorium, near Stourbridge

JUNIOR HOSPITAL MEDICAL OFFICER (resident) at above Sanatorium, which consists of 200 Beds at Prestwood, 35 at Edge View and 60 at The Limes, and is for pulmonary tuberculosis. Post now vacant.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DURHAM. NORTH WEST DURHAM HOSPITAL GROUP. SHOTLEY BRIDGE GENERAL HOSPITAL, SHOTLEY BRIDGE, CO. DURHAM. RICHARD MURRAY MATERNITY HOSPITAL, BLACKHILL, CO. DURHAM. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (obstetrics and gynæcology). The appointment is for 1 year and the salary is £745 p.a., less emoluments valued at £150. Applicants must have been qualified not less than 1 year. The successful applicant will reside at Shotley Bridge General Hospital and will have duties in both Obstetrical and Gynæcological Departments, including clinics. The post is recognised for the M.R.C.O.G. for Gynæcology.

Early application, accompanied by copies of 3 testimonials, should be made to the Group Secretary—

A. LAWTHER, F.C.C.S., F.H.A.

Shotley Bridge General Hospital, Shotley Bridge, co. Durham.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Appointment of RESIDENT HOUSE SURGEON (second or third post), vacant 7th August, 1954. Duties with General Surgical Unit which includes some orthopædics. 6 months appointment. Post recognised by the Royal College of Surgeons.

Applications, with the names and addresses of 2 referees, to the Secretary of the Management Committee.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (second pre-registration post or third post), vacant 18th September, 1954. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, with the names of 2 referees, to the Secretary, Chase Farm Hospital, Enfield, Middlesex.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) ORTHOPÆDIC REGISTRAR, East Suffolk and Ipswich Hospital and Ipswich Borough General Hospital. Post provides wide experience and training in orthopædic surgery. Appointment for 1 year, renewal for second year.

(2) MEDICAL REGISTRAR, Papworth Hospital, Cambridgeshire. Duties in both Medical and Thoracic Surgical Departments. Post provides good experience in tuberculosis and other chest diseases. Appointment for 1 year, renewable for second year.

(3) MEDICAL REGISTRAR, Peterborough Hospital Group. Principal hospital Peterborough Memorial (150 Beds). Duties may include work in Isolation Hospital, St. John's Hospital and Thorpe Hall Annexe. Appointment for 1 year, renewable for second year.

Detailed applications, including age and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 26th July, 1954. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary at (1) East Suffolk and Ipswich Hospital, Ipswich, (2) Papworth Hospital, (3) Memorial Hospital, Peterborough.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (General—800 Beds.) RESIDENT SENIOR HOUSE OFFICER required for a busy E.N.T. Department with 4 specialist operating-sessions, 5 outpatient clinics and a diagnostic hearing-aid centre. Recognised for D.L.O. and offers valuable experience in all aspects of E.N.T. work.

Apply, stating age, qualifications and experience, and naming 2 referees, to the Administrative Officer.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) HOUSE SURGEON required for 6 months from 1st September, 1954. Salary according to experience. Recognised for F.R.C.S. Consideration given to pre-registration candidates.

Apply, stating age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer by 30th July, 1954.

GLASGOW. BELVIDERE INFECTIOUS DISEASES HOSPITAL. JUNIOR HOUSE OFFICER for 6 months from 1st August, 1954. The post is recognised for pre-registration.

Apply, giving 2 names for reference, to the Physician-Superintendent, Belvidere Infectious Diseases Hospital, London-road, Glasgow, E.1.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for Orthopædic, Fracture and Accident Service. Previous surgical and orthopædic experience would be an advantage. Post recognised for F.R.C.S. Excellent Medical Library facilities.

Applications should be sent immediately to the Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 1st August, 1954.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

HAROLD WOOD HOSPITAL, Harold Wood, Essex (415 Beds.) SENIOR HOUSE OFFICER (Casualty Department), required 1st September. Recognised for F.R.C.S. examination. Near London with good travelling to all parts. Salary £745 p.a., less £130 p.a. for board-residence.

Apply to Hospital Secretary (Tel. Ingrebourne 2881).

HAROLD WOOD HOSPITAL, Harold Wood, Essex (near London). (415 Beds.) SENIOR HOUSE OFFICER (pædiatrics), required early September. Main general and casualty hospital of Brentwood Group. Recognised for D.C.H. Salary £745 p.a., less £130 p.a. for board and lodging.

Apply to Hospital Secretary (Tel. Ingrebourne 2881).

HAROLD WOOD HOSPITAL, Harold Wood, Essex. (415 Beds.) HOUSE PHYSICIAN (pre-registration post), resident, main general and casualty Hospital in Group.

Applications to Hospital Secretary (Tel. Ingrebourne 2881).

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic). Post vacant 1st August. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON (resident) required, Male or Female. Pre-registration post vacant 18th August. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (497 Beds.) SENIOR HOUSE OFFICER (obstetrics), Male or Female, required. (Unit of 40 obstetric beds.) Resident, post vacant 19th August, is recognised for D.Obst.R.C.O.G. National scale of salary.

Apply to Hospital Administrator.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) HOUSE SURGEON (E.N.T. and ophthalmology) required. Post now vacant. Approved pre-registration appointment.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ST. JOHN'S HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital which has 382 Beds for geriatric cases and chronic sick patients. Good facilities for modern method of treating geriatric cases. Pathological Laboratory ; Physiotherapy and Occupational Therapy Departments situated at the Hospital.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX GENERAL HOSPITAL. (425 Beds.) House SURGEON required. Approved pre-registration appointment.

Applications to the Group Secretary, Royal Halifax Infirmary Halifax.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Junior HOSPITAL MEDICAL OFFICER in Anæsthetics required. Opportunities for studying for D.A. Board-residence available.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) CASUALTY OFFICER (Male or Female), third post held, with attachment to Pædiatrician and Ophthalmic Consultant. Salary £525 p.a., less £125 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence immediately.

Apply, with full details and references, to Secretary, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (General—second post), to commence 5th August, 1954. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (resident Anæsthetist). The post, which is normally of 1 years duration, is recognised for the D.A. and the F.F.A.R.C.S. examinations.

Applications, stating age, nationality, together with recent testimonials, to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (first, second, or third post) required for Tuberculosis Unit of 90 Beds in a large general hospital.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 27th July, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. (1143 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR (transitional), in Obstetrics and Gynæcology at above Hospital. Applicants must be in their fourth or subsequent years as Senior Registrars in the specialty or have occupied such a post for 3 or more years provided the post was not vacated before 6th November, 1950. Appointment for 1 year with possibility of extension but not beyond 31st December, 1955. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, Middlesex, by 27th July, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Psychiatric Unit. Duties mainly in observation wards. Post recognised by Conjoint and R.M.P.A. as D.P.M. training post.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 27th July, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Specials Unit which comprises E.N.T. Plastics and Ophthalmic Departments. Candidates should have held medical and surgical house posts.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 27th July, 1954.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Dermatological Unit. Candidates must have held medical and surgical house posts and previous experience in dermatology desirable. Post suitable for anyone intending to specialise in this subject.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 27th July, 1954.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY, YORKSHIRE. (143 Beds.) HOUSE PHYSICIAN (either sex). First, second, or third post, vacant 1st August. Approved pre-registration appointment. Tenable for 6 months.

Applications, with full particulars as to age, nationality, qualifications, &c., and copies of testimonials, to be sent to Group Secretary, St. John's Hospital, Fell-lane, Keighley.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY, YORKSHIRE. (143 Beds.) 2 RESIDENT HOUSE SURGEONS (either sex); (general surgery, gynæcology, and E.N.T.) (general surgery, orthopædics, and E.N.T.). Both posts recognised under F.R.C.S. regulations. First, second, or third posts, vacant 1st August. Approved pre-registration appointments. Tenable for 6 months.

Applications, with full particulars as to age, nationality, qualifications, &c., and copies of testimonials, to be sent to Group Secretary, St. John's Hospital, Fell-lane, Keighley.

KIRKCALDY. VICTORIA HOSPITAL. 2 Resident HOUSE OFFICERS required to work under a Consultant in the Acute Medical Unit. Both posts are recognised for pre-registration. Date of commencement of duties, 1st October, 1954.

Apply, giving names of 3 referees, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP. Applications invited for post of CASUALTY OFFICER (Senior House Officer), Male or Female, resident or non-resident. Post vacant and suitable for one reading for higher qualification, affording contact with all Specialist Units in Hospital.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment, which is recognised for the D.A. and the F.F.A.R.C.S., will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Harrogate and Ripon Group, mainly at Harrogate General Hospital (resident/non-resident).

Ophthalmology

(*a*) Duties at St. James's Hospital (22 eye beds) and the Public Dispensary, Leeds (non-resident).

(*b*) Duties mainly at hospitals in the Hull A Hospital Management Committee Group (34 eye beds) (non-resident).

Orthopædic Surgery

(*a*) Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

(*b*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (34 orthopædic beds) (non-resident).

Pædiatrics

Huddersfield and Halifax Groups (aggregate of 60 acute pædiatric beds) with additional duties in Infectious Diseases (preferably resident). Small flat available at Northowram Infectious Diseases Hospital, Halifax.

Psychiatry

(*a*) Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency Colonies (aggregating 780 Beds) (non-resident).

(*b*) Storthes Hall Hospital, Kirkburton, near Huddersfield (2680 Beds), and associated clinics. Accommodation available for a single person.

Facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Radiotherapy

Duties at the Regional Radium Institute, Bradford (56 Beds) (preferably resident).

Thoracic Surgery

Regional Thoracic Centre, Pinderfields General Hospital, Wakefield. Experience in thoracic surgery desirable. (56 Beds under the Consultants to the Teaching Hospital.) Resident—married quarters available.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than Thursday, 29th July, 1954.

AMENDED ADVERTISEMENT

LEEDS. THE UNITED LEEDS HOSPITALS. Applications are invited for the post of REGISTRAR to the Department of Surgery of this Teaching Hospital Group. The post is resident in the first place, and will be for 1 year in the first instance.

Applications, stating age, qualifications and previous experience, together with the names of 3 referees, are to be forwarded to the Sub-Dean, School of Medicine, Leeds, 2, not later than 24th July, 1954.

LEEDS (near). WOODLANDS (ORTHOPÆDIC) HOSPITAL, RAWDON, near LEEDS. (92 Beds.) SENIOR HOUSE SURGEON required for Orthopædic Hospital at Rawdon. The post will be adjoined to the Casualty and Orthopædic Unit at the Royal Infirmary, Bradford, and offers excellent opportunities for a person interested in orthopædic work. Salary £745 p.a.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

LEICESTER GENERAL HOSPITAL (445 Beds) and ROYAL INFIRMARY (507 Beds). SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance, Leicester General Hospital (72 orthopædic beds), Leicester Royal Infirmary (54 orthopædic beds).

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for a Locum post as REGISTRAR in Otorhinolaryngology for the period to 30th September, 1954. The post may be resident or non-resident.

Apply as soon as possible on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. Post recognised for pre-registration purposes.

Apply, with full particulars together with 3 recent testimonials, to R. W. HOWICK, Group Secretary.

LINCOLN COUNTY HOSPITAL. Locum Casualty OFFICER (Junior Hospital Medical Officer grade) required for period 6th–18th September inclusive.

Apply, Secretary, County Hospital, Lincoln.

LICHFIELD (near). ST. MATTHEW'S HOSPITAL, BURNTWOOD, near LICHFIELD, STAFFS. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatry) at the above Hospital (1300 mental beds). Resident accommodation available.

Applications, with full details and copies of recent testimonials, to Medical Superintendent.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. HOUSE OFFICER for Orthopædic and Fracture Department required 10th August, 1954. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, giving the names and addresses of 3 referees, to be sent to the Secretary by 4th August.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. RESIDENT SURGICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 2nd August.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited for post of HOUSE SURGEON, vacant 8th August. Preference given to persons seeking a pre-registration post under the Medical Act, 1950.

Applications, stating age, nationality and qualifications, with names of 3 referees, to Hospital Secretary.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for post of CASUALTY OFFICER, vacant 1st September. Post recognised for F.R.C.S. Salary on House Officer scale plus £50 p.a.

Applications, stating age, qualifications and experience, with names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING-ROOM OFFICER. Post now vacant. Salary £745 a year, with deduction at present of £150 a year for residential emoluments.

Applications to Administrative Officer at Hospital as soon as possible.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL, ALTRINCHAM. (130 Beds.) NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration posts :—

JUNIOR HOUSE OFFICER (medical) to commence 1st August, 1954.

JUNIOR HOUSE OFFICER (surgical) to commence 27th July, 1954.

Applications should be sent to the Group Secretary, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER (near). DAVID LEWIS EPILEPTIC COLONY, ALDERLEY EDGE, near MANCHESTER. A medical Man or Woman is required to assist the Medical Director of this Colony. The post should be combined with reading or research. Salary £625 a year, plus full emoluments.

Please communicate with the Director at the Colony.

MANCHESTER REGIONAL HOSPITAL BOARD. Salford HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of NON-RESIDENT REGISTRAR, Neurosurgical Department at Salford Royal and Royal Manchester Children's Hospitals. In addition to adult work, the post offers exceptional opportunities for experience in pædiatric neurosurgery. Post vacant from 1st September, 1954.

Applications to Group Secretary, Salford Royal Hospital, Salford, 3, not later than 31st July, 1954.

MANCHESTER REGIONAL HOSPITAL BOARD, South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of ANÆSTHETIC REGISTRAR with duties in the South Manchester Group. This post is recognised by the Royal College of Surgeons for the F.F.A. R.C.S. and D.A.

Applications, stating age, qualifications, present post, experience and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Psychiatry in the Wigan and Leigh Hospital Management Committee Group. The person appointed will be required to assist the Consultant Psychiatrist at consultative clinics and with inpatient treatment, &c. The main centre is at Billinge Hospital where there is an active Psychiatric Unit with all modern treatments. Over 300 admissions annually. Good training facilities are available for anyone desiring to specialise in psychiatry, and to take the D.P.M. courses. Resident or non-resident post.

Applications, together with the names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR (resident or non-resident) in E.N.T. Surgery to the Wigan and Leigh Group of hospitals with main duties at the Royal Albert Edward Infirmary, Wigan. The post which is recognised for D.L.O. is now vacant.

Applications should be made to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, together with the names of 2 referees.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of E.N.T. REGISTRAR which is joint between the Rochdale and District and the Bury and Rossendale Hospital Management Committees.

Apply at once to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Orthopædics, which is joint between the Rochdale and District and Bury and Rossendale Hospital Management Committees. Recognised under the F.R.C.S. regulations.

Apply at once to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for a post of REGISTRAR in the Obstetric and Gynæcology Department in the Barrow and Furness Group of hospitals. 72 obstetric/gynæcological beds in main unit; Outpatient Departments and extensive surgical experience. Recognised for D.Obst.R.C.O.G.

Applications to Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness, not later than 31st July, 1954.

MANCHESTER ROYAL EYE HOSPITAL. United MANCHESTER HOSPITALS. Applications are invited for post of SENIOR HOUSE OFFICER. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER to the Medical Professorial Unit, to commence on 21st September, 1954. Whole-time, non-resident post, tenable for 6 months, renewable for a second and possibly a third 6 months.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 4th August, 1954.

G. H. TAYLOR, Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Department (resident or non-resident). Duties are primarily in the active medical wards. Excellent experience is available in the unit which has been developed on modern lines and has available full general hospital facilities.

Applications, stating age, qualifications, present post, experience and the names of 2 referees, to be forwarded to the Group Secretary at the Hospital immediately.

MANCHESTER. WYTHENSHAWE HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident or non-resident post of SENIOR HOUSE OFFICER (surgical). Post will give opportunity of experience in general E.N.T. and plastic surgery and burns.

Applications to Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 SENIOR HOUSE OFFICER (anæsthetics). Hospital recognised for training for Diploma in Anæsthetics. Post now vacant.

Forms from Secretary, Park Hospital, Davyhulme.

NEWARK GENERAL HOSPITAL, Newark. (82 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL OFFICER with general duties required at Registrar rate of pay. This post offers good experience to anyone preparing to enter general practice. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY. SENIOR HOUSE OFFICER. The above post, either resident or non-resident, is now vacant. It affords excellent experience in neurology and would be of value to candidates for a higher medical qualification. No surgical work is involved, the duties being purely medical and no previous neurosurgical experience is required. The appointment is tenable for ▶2 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials by 24th July, 1954.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER to the Professorial Psychiatric Unit in the above Hospital. The unit is under the clinical direction of the Department of Psychological Medicine, King's College Medical School, University of Durham. The appointment is tenable for 1 year, and is now vacant. Practitioners who have held a previous house appointment in general medicine or surgery may apply. Salary according to terms and conditions of service issued by the Ministry of Health. The Hospital is recognised for the purpose of study for the Diploma in Psychological Medicine.

Applications, together with 1 copy of 2 testimonials, should be sent within 10 days of the appearance of this advertisement to the Secretary, Newcastle General Hospital, 418, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE REGIONAL HOSPITAL BOARD. Sunderland AREA HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR (whole-time) required at Sunderland Orthopædic and Accident Hospital (120 Beds) and Grindon Sanatorium (50 Beds). Salary £850/£965 p.a. Duties will include work in the wards and Casualty Departments. This post is suitable for applicant interested in working for Primary F.R.C.S. and arrangements can be made for the person appointed to attend postgraduate lectures and demonstrations in anatomy and physiology at the Medical School in Newcastle. Post recognised for F.R.C.S. examination.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA FOR CUMBERLAND AND NORTH WESTMORLAND. EAST CUMBERLAND GROUP OF HOSPITALS. SURGICAL REGISTRAR (resident) whole-time, required for 1 year in the first instance with the likelihood of extension. Salary £850 p.a. Main duties at the Cumberland Infirmary, Carlisle (322 Beds), where the Registrar will have duties in the Casualty Department and in the wards.

Applications, together with names and addresses of 1–3 referees and or 1–3 testimonials, should be sent to the Senior Administrative Medical Officer, 1, Lonsdale-street, Carlisle, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Sedgefield Hospital Management Committee

REGISTRAR SURGEON (whole-time), resident, for Sedgefield General Hospital (360 Beds). Single or married accommodation available. Appointment for 1 year in the first instance and may be renewed for a further period.

Tees-side Hospital Management Committee

REGISTRAR SURGEON (whole-time), resident or non-resident, at Stockton and Thornaby Hospital (130 Beds). Appointment for 1 year in the first instance and may be renewed for a further period.

Hartlepools Hospital Management Committee

REGISTRAR PATHOLOGIST (whole-time) non-resident; unfurnished accommodation available. Appointment for 1 year in the first instance and may be renewed for a further period. Applications will be considered from doctors who do not necessarily intend to specialise in pathology but desire pathological experience for 1 or 2 years. The Central Laboratory at the General Hospital, West Hartlepool, is in a new building, and this appointment offers good experience in pathology as applied to the clinical specialties and to general practice.

Newcastle upon Tyne Hospital Management Committee

REGISTRAR in Pathology (whole-time), required for Newcastle General Hospital. Appointment for 1 year in the first instance and may be renewed for a further period. Single or married accommodation available.

Darlington Hospital Management Committee

REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time), resident, required for duties at Greenbank Maternity Hospital (53 maternity beds) and Darlington Memorial Hospital (26 gynæcological beds). Single accommodation available. Post recognised for M.R.C.O.G. examination. Appointment for 1 year in the first instance and may be renewed for a further period.

Salary £850–£965 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER for the above Hospital. Duties to commence on or about 9th August. Salary £745 p.a., less a deduction of £150 for residential emoluments.

Applications, stating age, qualifications and experience together with testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

General Hospital, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL. Senior Surgical HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining experience in all types of general surgery. Duties to commence on 1st September, 1954. Salary and conditions of service in accordance with the published conditions of the Ministry of Health. If resident £150 p.a. deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

Nottingham General Hospital.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered general practitioners for the post of THIRD CASUALTY OFFICER (Senior House Officer grade). Salary (less £150 emoluments) and conditions of service in accordance with those laid down by the Ministry. Duties to commence as soon as possible. This post offers wide experience of casualty work. The Staff establishment requires only 1 night in 3 emergency work, and off duty permits time for study for higher examinations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. Ear, Nose and THROAT DEPARTMENT. Applications are invited for the post of SENIOR E.N.T. HOUSE OFFICER for the above Hospital. This appointment is recognised for the D.L.O., and the F.R.C.S. examinations. Terms and conditions of service in accordance with the regulations of the Ministry of Health. Duties to commence about 5th August. Although the post is normally resident, consideration will be given to any applicant who desires to live out.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Senior Surgical HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining operating experience in general surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with the published conditions of the Ministry of Health. If resident £150 p.a. deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary.

General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. 2 Resident HOUSE SURGEONS required (Male or Female, also open to pre-registration candidates) at the above Hospital; duties to commence as soon as possible. Salary and conditions of service in accordance with published regulations. The appointment is for a term of 6 months.

Applications, stating age, qualifications, and experience, to be sent to HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER; duties to commence as soon as possible. Terms and conditions of service in accordance with published regulations of the Ministry of Health. £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds. Recognised for the D.C.H.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) which is vacant immediately. The post is tenable for 6 months or a year by agreement.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM. CITY HOSPITAL (804 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), vacant 1st September. The post is approved for F.R.C.S. The officer appointed will be required to spend 6 months in general surgery, 3 months thoracic surgery and 3 months orthopædic and plastic surgery. A deduction of £150 p.a. will be made for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 26th August, 1954. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), vacant now. The post is recognised for the D.A. and the F.F.A.R.C.S.

Applications, stating age, nationality and qualifications, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 1st August, 1954. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NORWICH. ST. ANDREW'S HOSPITAL, Thorpe, NORWICH. (1200 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry at above Hospital. Full range of modern psychiatric treatments and a number of associated general hospital outpatient clinics. Married or single quarters available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 2nd August, 1954. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department, vacant 1st August. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 23rd July, 1954.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN for general medicine and dermatology, vacant 1st August. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 23rd July, 1954.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 5th August, 1954.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Radiotherapy and E.N.T. Departments, vacant 18th August. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 6th August, 1954.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. (555 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required in the X-ray Diagnostic Department at above Hospital, for 1 year in first instance.

Application forms obtainable from, and returnable to, the Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 3rd August, 1954. Hospital may be visited by direct appointment.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and orthopædic surgery, vacant 1st August. Recognised for the Final F.R.C.S. in general surgery, and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 23rd July, 1954.

NEWTON ABBOT HOSPITAL, South Devon. Required, approximately 30th September, 1954, SENIOR HOUSE OFFICER (medicine), Male or Female. Duties divided equally between 20 acute medical beds in General Section and 140 geriatric beds. This Officer is also required to stand in when Senior House Surgeon is otherwise engaged. Married quarters available.

Applications, stating qualifications, nationality, and age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, South Devon.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the following House Officer posts vacant at the Churchill Hospital on dates stated :—

1 HOUSE SURGEON (Thoracic Surgery Unit), vacant on 1st August, 1954.

*1 HOUSE SURGEON (Radiotherapy Unit), vacant immediately.

*Post recognised as surgical pre-registration post and available also as Senior House Officer post to candidate with suitable qualifications and experience.

Applications also invited for post of RESIDENT JUNIOR PATHOLOGIST at Radcliffe Infirmary, with effect from 1st September, 1954. Subject to suitable qualifications, this post can be graded as Senior House Officer.

Post or pre-registration applicants considered.

Applications, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford.

OXFORD. WARNEFORD AND PARK HOSPITALS. SENIOR HOUSE OFFICER wanted. Warneford Hospital (150 Beds) is developing as an acute Psychiatric Unit, specially related to research and postgraduate teaching. The adjacent Park Hospital is a Neurosis Centre (30 Beds) with daily out-patient clinics. Previous psychiatric experience not essential. This post is specially suitable for training for D.P.M., for which full facilities are available, including neurology and child psychiatry. The post is resident with accommodation for a single man.

Further particulars may be obtained from the Physician-Superintendent, Warneford Hospital, Oxford, to whom application should be sent, with the names of 2 referees, within 14 days.

PAISLEY. I.D. HOSPITAL. Board of Management for PAISLEY AND DISTRICT HOSPITALS. HOUSE PHYSICIAN required for above Hospital for period commencing 1st August, 1954. Salary in accordance with latest scale.

Applications should be submitted as early as possible to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOSPITAL (with Annexe 122 Beds). PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service, centring on Mount Gold Orthopædic and associated hospitals. Post recognised for F.R.C.S. Vacancy commences from 1st August, 1954.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER to Casualty and Traumatic Department, vacant 1st August, 1954.

SENIOR HOUSE OFFICER in Surgery, vacant about 1st August, 1954. Recognised for the F.R.C.S.

DENTAL HOUSE SURGEON, vacant immediately. Recognised for the Fellowship.

Applications, stating age, nationality, qualifications, and experience, with the names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE.

East Glamorgan Hospital, Church Village, near Pontypridd (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 177,000. Recognised for M.R.C.O.G., D.Obst.R.C.O.G., D.C.H., F.F.A.R.C.S.)

SENIOR HOUSE OFFICER (medical).
SENIOR HOUSE OFFICER (surgical).
SENIOR HOUSE OFFICER (obstetrics and gynæcology).
SENIOR HOUSE OFFICER (anæsthetics).
SENIOR HOUSE OFFICER (pathology). Post partly clinical and partly laboratory ; previous experience in pathology not essential.
HOUSE OFFICERS (surgical).
HOUSE OFFICERS (medical).
HOUSE OFFICER (pædiatrics).
HOUSE OFFICERS (obstetrics).

Persons appointed will perform duties at other hospitals in the Group as required.

Llwynypia Hospital, Llwynypia, Rhondda (50 acute medical beds, geriatric beds ; area population of 112,000)

SENIOR HOUSE OFFICER (medical). The person appointed will have responsibility for the Group Infectious Diseases Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment, vacant 1st October, 1954, of REGISTRAR in the Chest Services of the Group for duties at the Portsmouth Chest Clinic and the tuberculosis wards at the Infectious Diseases Hospital and St. Mary's Hospital, Portsmouth, including experience with a major Thoracic Surgery Unit.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 30th July, 1954. Canvassing will disqualify. Candidates may visit the above Clinic and Hospitals by arrangement with the Group Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

SENIOR HOUSE OFFICER required in the Traumatic and Orthopædic Department (105 Beds). Duties mainly at the Royal Portsmouth Hospital. Vacant now.

Saint Mary's Hospital (74 acute medical beds)

HOUSE PHYSICIAN, vacant 4th August, 1954. Pre-registration post.

Royal Portsmouth Hospital—Pædiatric Department (15 Beds)

HOUSE PHYSICIAN, vacant 17th August, 1954.

Queen Alexandra Hospital (62 acute medical beds)

SENIOR HOUSE PHYSICIAN, vacant 17th August, 1954.

Saint Mary's Hospital (107 surgical beds)

HOUSE SURGEON, vacant 1st August, 1954. Pre-registration.

HOUSE SURGEON, vacant 1st August, 1954. Pre-registration.

HOUSE SURGEON, vacant 3rd August, 1954. Pre-registration.

Royal Portsmouth Hospital (70 surgical beds)

HOUSE SURGEON, vacant 1st August, 1954. Pre-registration.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the appointments of 3 HOUSE PHYSICIANS (Male or Female), vacant 1st September, 1954, for periods of 6 months. Salary £425–£475 p.a., less £125 p.a. board-residence. Successful applicants will be required to carry out duties at the following Reading Hospitals : Royal Berkshire (405 Beds), Battle (420 Beds), and Prospect Park (104 Beds). The experience to be gained is excellent, as it covers the whole field of clinical medicine, including children's diseases, fevers, pulmonary tuberculosis, and geriatrics.

Apply, by 3rd August, 1954, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners (Male or Female), for the appointment of RESIDENT ANÆSTHETIST (Senior House Officer grade) vacant immediately for period of 12 months. Recognised for F.F.A. R.C.S. Salary £745 p.a., less £125 p.a. board-residence.

Write, stating age, qualifications with dates, nationality and present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Department of Pathology of the Rochdale Group of hospitals. The duties will consist mainly of clinical pathology, also general and emergency work and supervision of the blood banks. Previous pathology experience is not essential.

Applications, giving usual particulars, and names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

ROCHDALE INFIRMARY. Rochdale and District HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædics). Post recognised for 6 months for F.R.C.S. examination.

Apply at once to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric and Psychiatric Units at the above Hospital. A wide range of facilities are available at the Hospital for the investigation, treatment and rehabilitation of acute and chronic cases.

Applications, stating age, &c., to be sent to the undersigned by 31st July, 1954. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit, vacant now. The service consists of 100 Beds divided equally between traumatic surgery and " cold " orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD. ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (3) are required towards the end of August, 1954, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. 6 months appointments. This very active General Surgical Unit of approximately 100 Beds affords ample opportunity for candidates to obtain first-class tuition and experience.

Applications should be forwarded immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) HOUSE PHYSICIAN (resident) required from 25th July, 1954. Open to either pre-registration applicants or to fully qualified practitioners. Post tenable for 6 months.

Apply to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE PHYSICIAN required from 1st September, 1954. This Hospital provides for acute medical and surgical patients in addition to a limited number of fever cases. The post, which is also open to pre-registration candidates, offers good opportunities for gaining experience in both general medicine and fevers.

Applications should be addressed immediately to Medical Superintendent stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) SENIOR HOUSE OFFICER in Anæsthetics required from 15th July, 1954. Resident post for Male or Female. Married quarters are available. Good experience, modern equipment. Recognised for D.A. and F.F.A.R.C.S.

Applications to Medical Superintendent. Hospital may be seen by arrangement. Tel. : Romford 7711.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required, vacant middle September, 1954. (Post not approved for pre-registration purposes.)

Applications should be forwarded to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROTHERHAM. DONCASTER GATE HOSPITAL. (155 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required with duties also at the Moorgate Hospital, Rotherham (355 Beds). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SALFORD 6, LANCASHIRE. HOPE HOSPITAL. Salford HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of SENIOR HOUSE OFFICER ANÆSTHETIST (resident), which becomes vacant at the end of August. About 3000 operations annually performed. 2 Consultant Anæsthetists are available. Hospital recognised for the Diploma in Anæsthetics examination.

Applications, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary as soon as possible.

SALFORD ROYAL HOSPITAL. Salford Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Urological Department, vacant August. The position, which offers a wide experience in urology, is recognised for the F.R.C.S. and is tenable for 6 or 12 months. Salary £745 p.a., less £140 for board and lodging.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Salford Royal Hospital, Salford, 3, Lancs.

SALISBURY GENERAL HOSPITAL. Children's Department. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of PÆDIATRIC HOUSE OFFICER to the above Department, situated at Odstock Hospital and containing 55 medical and surgical beds. Post recognised for D.C.H.

Applications, stating age, nationality, qualifications, previous posts held, with relevant testimonials, should be submitted immediately to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Orthopædic DEPARTMENT. SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR to the above department, vacant 1st October, 1954.

Application forms may be obtained from, and must be returned to, Group Secretary, Odstock Hospital, Salisbury, within 14 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT or NON-RESIDENT SENIOR HOUSE OFFICER to the E.N.T. Department. Accommodation may be available for non-resident at a later date. The Department is recognised for D.L.O. and F.R.C.S. Post vacant now.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury, Wilts.

SELBY (near). GATEFORTH HOSPITAL. Senior House OFFICER. Post vacant 1st August. Appointment for 1 year. 100 male tuberculosis beds. Associated with Thoracic Surgical Unit. Charge for board and lodging £150 p.a. (subject to review).

Applications to Group Secretary, Seacroft Hospital, York-road, Leeds.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE SURGEON (Senior House Officer grade) early August—offering excellent experience in general surgery and gynæcology.

Applications, naming 2 referees, to Group Secretary.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for a post of SENIOR HOUSE OFFICER in Psychiatry at Craig Dunain Hospital, Inverness (930 Beds).

Applications, on forms obtainable from the undersigned, should be submitted by 31st July, 1954.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Medicine at the Royal Infirmary of Edinburgh. The person appointed will, in the first instance, be attached to the Professorial Unit to undertake duties in connection with hæmatology but must be prepared to undertake duties in other Units as might be advised by the Medical Board of Studies if this is in his interests in affording a wide general training. The post is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh 3, by 5th August, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments which will be for 1 year in the first instance :—

REGISTRAR for duties in General Surgery at the Victoria Infirmary and in Thoracic Surgery at Hairmyres Hospital, East Kilbridge.

REGISTRAR in Obstetrics and Gynæcology based at Stobhill Hospital, Glasgow.

SENIOR REGISTRAR in Psychiatry at Hawkead Mental Hospital and the Victoria Infirmary, Glasgow, and Associated Clinics. An unfurnished flat is available at Hawkhead Mental Hospital.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 21st August, 1954.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SENIOR HOUSE OFFICER (casualty), resident or non-resident. Duties from 9 A.M. to 6 P.M. daily, except Saturday, which will be 9 A.M.–1 P.M. Applicant required to do 1 week-end's duty in 3. Post recognised for F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) Senior House Officer to work as CLINICAL PATHOLOGIST to Group Laboratory. Appointment tenable for 1 year, resident or non-resident, vacant end of July. (A unit of the Public Health Laboratory Service is housed in the same building.)

Apply Group Secretary, Royal Salop Infirmary, Shrewsbury, naming 3 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for M.R.C.O.G.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (gynæcology), vacant 1st October, 1954. Duties divided between units in charge of Professor of Obstetrics and Gynæcology, University of Sheffield, and full-time Consultant respectively.

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and names of 2 persons to whom reference may be made, should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11, not later than 7th August, 1954.

W. STANSFIELD, Secretary.

SHEFFIELD. CITY GENERAL HOSPITAL. (642 Beds. Recognised for Final Fellowship Examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (general surgery/thoracic surgery) required. Appointment for 1 year in first instance in general surgery and if extended, second year will be spent in thoracic surgery. General Hospital with Regional Department of Cardiology. Thoracic Surgical Unit deals with tuberculous and non-tuberculous cases. Previous surgical experience desirable.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 26th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR in Radiology for the Leicester Royal Infirmary. Appointment for 1 year in first instance, reviewable annually. It has been agreed between Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that the tenure of the appointment will be divided between the Leicester Royal Infirmary and the Teaching Hospitals.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, to arrive not later than 2nd August, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum NON-RESIDENT SENIOR REGISTRAR (radiology) required immediately at the Leicester Royal Infirmary for 1 month in the first instance. Remuneration at the rate of £22 per week.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications are invited for the following posts at the above Hospital :—

(*a*) NON-RESIDENT REGISTRAR to the Department of Dermatology. Higher qualification preferable.

(*b*) NON-RESIDENT SENIOR HOUSE OFFICER in Clinical Pathology. Post vacant 25th August.

Applications for the above posts should state age, qualifications and experience, with the names of 3 referees and be sent immediately to the following :—

For post (*a*) Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

For post (*b*) The Superintendent, Royal Infirmary, Sheffield, 6.

Copy testimonials may be sent for post (*b*).

SHEFFIELD. LODGE MOOR HOSPITAL FOR INFECTIOUS DISEASES. (508 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. SHEFFIELD NO. 3 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER. Candidates should have held a resident appointment in a Hospital. Salary £745 p.a. (subject to a deduction of £150 p.a. for residential emoluments). The appointment is normally for 1 year, subject to 1 months notice either side.

Applications, stating age, qualifications, &c., to the Group Secretary, Sheffield No. 3 Hospital Management Committee, Lodge Moor Hospital, Sheffield, 10.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE PHYSICIAN required for post vacant 6th August.

Applications, stating age and qualifications with 2 copy testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum SENIOR HOUSE OFFICER (gynæcological) required for the month of August.

Applications, stating age, qualifications and experience, together with names of 2 referees. to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE OFFICER (casualty) required (1 of 2) for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, together with names of 2 referees, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. SENIOR HOUSE OFFICER (casualty) required (1 of 2), for busy Casualty Department. Post vacant 1st August. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, together with 2 testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum SENIOR HOUSE OFFICER (casualty) required, 1st August, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, together with 2 testimonials, to Hospital Secretary.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic) required for the above Hospital (Orthopædic Unit 74 Beds). This Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of RESIDENT or NON-RESIDENT SENIOR HOUSE OFFICER (Tuberculosis Service) for duties at the Hadrian and Moor Park Hospitals.

Applications, giving full details of experience with 2 testimonials, or names of 2 referees, to Group Secretary, Preston Hospital, North Shields, as soon as possible.

SOUTHEND GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER to the Orthopædic and Fracture Departments, vacant mid-July. The Orthopædic and Accident Department of this Hospital is the centre for reference of all cases from a large surrounding area and the post offers excellent experience in all aspects of orthopædic and traumatic surgery under the supervision of and with instructions from the newly appointed Consultant-in-charge. Post recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, should be sent to the undersigned by 21st July, 1954.

J. C. FIELD, Secretary.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (382 Beds.) Locum SURGICAL REGISTRAR required for general surgical team from 31st July to 23rd August, 1954, inclusive.

Applications to Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (382 Beds.) CASUALTY OFFICER (Registrar grade) required for the above Hospital. Post recognised for the F.R.C.S. regulations. Appointment tenable for 6 months from 1st August, 1954, subject to review at end of this period.

Applications to Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, by 23rd July, 1954.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (435 Beds. Recognised for D.A. and recognition for F.F.A.R.C.S. applied for.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st October, 1954. Previous anæsthetic experience desirable, but not essential. The post offers experience in anæsthesia for all types of general surgery, thoracic and cardiac surgery, including an Obstetric Unit of 60 Beds. Staff includes a Senior Registrar, who shares in emergency duties.

Applications, with necessary details, and copy testimonials, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident post of SENIOR HOUSE OFFICER in the E.N.T. Department of the above Hospital. The Hospital is recognised under the regulations of the F.R.C.S. (E.N.T.) and the D.L.O.

Applications, stating age, qualifications and experience, should be forwarded to the Group Secretary, St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Surgical Unit of the above Hospital. The Hospital is recognised for the F.R.C.S. (Eng.) examinations.

Applications, stating age, qualifications and experience, should be forwarded to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

SWINDON HOSPITAL GROUP. (536 Beds.) Swindon AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE SURGEON for General Surgical Unit (80 Beds). Post recognised for F.R.C.S. and training under pre-registration internship regulations. Married accommodation available.

Applications, giving full details and copies of 3 recent testimonials, to the Secretary, Swindon and District Hospital Management Committee, 7, Okus-road, Swindon, as soon as possible.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for post vacant 5th August. Preference given to persons seeking pre-registration post under Medical Act, 1950.

Applications, stating age, qualifications with dates, together with copies of 2 testimonials, to Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON to the Unit of Obstetrics and Gynæcology required. Post recognised for M.R.C.O.G. Preference given to candidates with previous experience in midwifery and gynæcology, and who are seeking a pre-registration House Officer post.

Applications, stating age, experience and qualifications with dates, together with copies of 2 testimonials, should be forwarded to the Hospital Secretary, by 1st August.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female), recognised for pre-registration, at the above Hospital. National Health Service terms and conditions. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Resident Casualty Officer). The commencing salary is in accordance with the scale £700–£50–£1000, less a deduction of £130 for residential emoluments. Applications will also be considered for a short-term period on a week-to-week basis.

Applications, stating age, experience and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital (Tel. No. 1666), Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female); recognised for pre-registration. Salary will be £350–£450 p.a., less a deduction of £100 for full residential emoluments.

Applications should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Warrington and District HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. Scale of salary £670 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington.

WHITEHAVEN HOSPITAL, Cumberland. (109 Beds, plus 19 beds in Annexe.) HOUSE SURGEON, with orthopædic and casualty duties (recognised pre-registration; Senior House Officer grade if appropriate), vacant immediately.

Detailed applications, with dates and copies of 2 testimonials, to Group Secretary, Workington Infirmary, Cumberland.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Orthopædic Surgery required. Post vacant 17th July, 1954.

Applications, with the names of 2 referees, to the Secretary, Wigan Infirmary.

WELSH REGIONAL HOSPITAL BOARD. Registrar (general surgery), Morriston Hospital, Morriston, near Swansea (non-resident). Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens SENIOR REGISTRAR in Orthopædic Surgery required Morriston Hospital from 1st August. Salary £22 weekly.

Applications, naming 2 referees, to Senior Assistant Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WEST BROMWICH. HALLAM HOSPITAL. West BROMWICH AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 18. Applications are invited for a Locum Tenens JUNIOR ASSISTANT in the Group Pathological Laboratory. Salary £13–£16 per week according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to the Pathologist, as soon as possible.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited from medical practitioners, either qualified or undertaking Pre-registration Service, for 2 HOUSE SURGEON (resident) posts at the Dunfermline and West Fife Hospital, Reid-street, Dunfermline (General Surgical—115 Beds). Salary and conditions of service in accordance with Whitley Council agreements. The successful applicants will be required to take up duty on 1st September, 1954.

Applications, giving full particulars, should be made to the Medical Superintendent.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited from suitably qualified medical practitioners, for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident) at Glenlomond Hospital, by Kinross (140 Beds—Respiratory and non-respiratory tuberculosis). The post is superannuable under the National Health Service superannuation regulations. Salary and conditions of service in accordance with national agreements.

Applications, giving full details of previous experience, should be lodged with the Physician-Superintendent, Glenlomond Hospital, by Kinross.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment, vacant mid-August, of HOUSE PHYSICIAN (non pre-registration). The appointment is for 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment of HOUSE SURGEON (non pre-registration). The appointment will be for a period of 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications, and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGION. Applications are invited for the post of REGISTRAR in the Department of Pathology. Preferably resident. The person appointed will work at the Main Hospital (311 Beds). Work will include all branches of pathology. Post recognised by the Examining Board in England for Diploma in Pathology.

Application forms obtainable from Secretary, Royal Hampshire County Hospital, Winchester, to be completed and returned within 14 days of publication of this advertisement.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER in the Pathological Department, vacant 1st August. Preferably resident. Duties will include training in the various branches of clinical pathology, especially haematology. Previous experience in clinical pathology desirable, but not essential.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area orthopædic team. Appointment for 6 months in first instance. Vacant 10th August.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE OFFICER (anæsthetics), vacant 1st September. The Hospital is recognised for the F.F.A.R.C.S. and D.A.

Applications, with copies of 2 testimonials, to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON (Male or Female), required for post vacant 1st September. Obstetric post recognised for D.Obst.R.C.O.G. Successful candidate will be resident at Old Windsor Unit of the Hospital. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, and copies of recent testimonials or names of 3 referees, to Hospital Secretary by 30th July.

WOKING AND CHERTSEY HOSPITAL MANAGEMENT COMMITTEE. GROUP PATHOLOGY LABORATORY. SENIOR HOUSE OFFICER required September for duty in Group Laboratory situated at St. Peter's Hospital, Chertsey, Surrey. Good experience in all branches of clinical pathology.

Applications to Group Secretary, Huntington, Guildford-road, Chertsey, Surrey, by 31st July.

WOKING VICTORIA HOSPITAL, Woking, Surrey. (72 Beds.)

HOUSE OFFICER.
SENIOR HOUSE OFFICER.

Required immediately for medical and surgical duties. Post-registration appointments.

Apply, with 2 testimonials, to Hospital Secretary.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN at the above Hospital commencing on 1st September. The post is a pre-registration one. The new children's wing consists of 50 Beds and Cots under the direction of the Consultant Pædiatrician. Duties will be shared with the Registrar and include care of 20 neonates and prems. Salary and conditions of service in accordance with the Whitley Council recommendations, viz. : £425–£50–£525, less £125 for residential emoluments.

Applications, stating age, with details of previous experience and copies of 2 recent testimonials, should be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER (Anæsthetist). Appointment recognised for D.A. and F.F.A.R.C.S. Vacant now.

HOUSE OFFICER (Casualty Department), vacant now.

New Cross Hospital, Wolverhampton

*HOUSE OFFICER (general surgery), vacant now.

SENIOR HOUSE OFFICER (obstetrics). Appointment recognised for D.Obst.R.C.O.G. Vacant now.

Women's Hospital, Wolverhampton

*HOUSE OFFICERS (2), gynæcological and obstetric. Appointments recognised for M.R.C.O.G. 1 vacant 18th August, 1 vacant 21st September.

*Approved for Pre-registration Service.

Wolverhampton Eye Infirmary (recognised for F.R.C.S. and D.O. examinations)

Part-time NON-RESIDENT CLINICAL ASSISTANT required, 3 sessions weekly, Monday, Wednesday, and Friday mornings. Duties in association with Consultants, mainly refraction work at morning outpatient clinics. D.O. an advantage. Salary £525 p.a. for 3 sessions weekly.

HOUSE OFFICER, vacant 2nd August.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) at the above Hospital. The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M., and has associated child guidance clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORCESTER (near). POWICK HOSPITAL. Locum JUNIOR HOSPITAL MEDICAL OFFICER required.

Applications, with copies of testimonials, should be sent to the Medical Superintendent.

WORCESTER ROYAL INFIRMARY. Applications invited for the post of HOUSE PHYSICIAN (pædiatrics) vacant end August.

Applications to the Secretary.

WORKINGTON INFIRMARY. (108 Beds.) Resident HOUSE SURGEON (Male or Female), pre-registration. Good experience in general and pædiatric surgery and casualty work. First, second, or Senior House Officer appointment according to experience, at appropriate remuneration. Vacant now.

Applications, naming 2 referees, to the Secretary, Workington Infirmary, Cumberland.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTHLANDS HOSPITAL, SHOREHAM-BY-SEA, SUSSEX. Applications are invited for the post of ORTHOPÆDIC REGISTRAR to the Group with duties mainly at Southlands ; there are also general surgical duties.

Forms of application are obtainable from the undersigned, who will be glad to furnish any further details regarding the post, and must be returned within 14 days from the appearance of this advertisement. A. V. OAKTON, Group Secretary.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, E. Yorks (207 Beds)

(*a*) HOUSE SURGEON (first, second, or third post), vacant now. General surgical duties, some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Recognised for F.R.C.S. Approved pre-registration post. Married accommodation available.

(*b*) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post), vacant now. Offers good opportunity for general experience in busy acute General Hospital. Approved pre-registration post. Married accommodation available.

(*c*) ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory, with attendance at Branch Laboratory, Driffield. Offers experience all branches pathology.

(*d*) SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required, vacant August. Hospital has Maternity Unit of 22 Beds and Gynæcological Annexe of 18 Beds.

East Riding General Hospital, Driffield, E. Yorks (269 Beds)

(*e*) HOUSE SURGEON (first, second, or third post), vacant now. Approved pre-registration post. General surgical duties. Recognised for F.R.C.S.

Broadgate (Mental) Hospital, Beverley, E. Yorks (650 Beds)

(*f*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Salary for (*a*), (*b*), (*e*) and (*f*) is £425–£525, and for (*c*) and (*d*) is £745. Fully qualified practitioners may apply for the pre-registration posts.

Detailed applications to Group Secretary, Westwood Hospital, Beverley, Yorks.

CANADA. ST. MARY'S HOSPITAL, Montreal, Canada. A few outstanding opportunities still available in ROTATING INTERNESHIPS—Medicine, Surgery, Obstetrics, choice of Emergency, Anæsthesia or Laboratory. Hospital located in Medical Centre with attractive stipend. (250 Beds.)

Reply, giving full details to Administrator, St. Mary's Hospital, 3830, Lacombe-avenue, Montreal, P.Q., Canada.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. NEUROLOGY RESIDENCIES available in 700-Bed University-Teaching, General Hospital. Salary range $1620–$2220 annually, plus laundry, uniforms and room.

Address inquiries to Medical Director.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

York. Fairfield Sanatorium (63 Beds); **City Hospital** (265 Beds)

Required immediately, SENIOR HOUSE OFFICER in Chest Diseases and General Medicine to spend half time at Fairfield Sanatorium (63 Beds) and at the City Hospital, where 8 Beds are reserved for investigation of chest cases, and where out-patient refill clinics are held, the remainder of time at County and City General Hospitals (269 and 265 Beds respectively), in Department of General Medicine. Previous experience in treatment of tuberculosis an advantage. Salary £745. Accommodation may be provided temporarily.

York Military Hospital (Civilian Wing) (60 Beds)

Required immediately, SENIOR HOUSE OFFICER (resident or non-resident). There are 18 gynæcological beds, 30 general surgical beds, and 12 medical beds. The Hospital is associated with the County Hospital (general hospital of 269 Beds) where relief casualty and emergency work and relief work for House Surgeons may be undertaken and where residence can be provided. Salary £745, less £153 if resident.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to, the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

Public Appointments

LANARK. COUNTY COUNCIL OF THE COUNTY OF LANARK. Applications are invited for the appointment of MEDICAL OFFICER OF HEALTH for the County of Lanark. Successful applicant shall undertake all the duties imposed on a Medical Officer of Health under the relative Acts and Orders and perform such other duties as may be attached to the office. Applicants must be qualified medical practitioners and must also be registered on the Medical Register as the holder of a Diploma in Sanitary Science, Public Health or State Medicine, and must have had administrative experience in a similar post or as Assistant or Deputy Medical Officer of Health. Medical Whitley Council—Committee "C" salary scale and conditions of service. Present scale £2200–£2450 p.a. The Medical Officer shall reside in the County. Superannuation. Medical examination. No canvassing.

Applications, stating age, qualifications, experience, &c., together with names and addresses of 3 referees to whom reference may be made, should be lodged with the subscriber not later than 16th August, 1954.

WM. C. BROWNLIE, County Clerk.

Lanarkshire House, 191, Ingram-street, Glasgow, C.1.
7th July, 1954.

HER MAJESTY'S COLONIAL SERVICE. British Guiana. RADIOLOGIST required for the Medical Department, British Guiana, to perform general work of radiologist and to supervise and control X-ray Department in the Public Hospital at Georgetown. He may be required to visit and supervise working of X-ray units in other hospitals, and perform such other medical duties as the Director of Medical Services may request. Appointment on permanent basis with pension (non-contributory) at age of 55, or on short-term agreement for 3 years in first instance. Doctors in the National Health Service may resign from the National Health Service but retain their superannuation rights during their time in the Colonial Service (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Colonial salary on leaving the Colonial Service. Total emoluments of £1650–£1850 a year made up as follows: salary scale from £1000 to £1200 p.a.: private practice not permitted but a non-pensionable allowance of £300 p.a. in lieu of consultation fees is payable together with a pensionable specialist allowance of £300 p.a. and a temporary (non-pensionable cost-of-living allowance of £50 p.a. Pension is earned at the rate of 1/600th of final pensionable emoluments for each completed month of service. Income-tax at local rates. Free unfurnished quarters are provided or £100 a year in lieu is payable. Local leave permissible and generous home leave granted after each tour of 2–3 years. On appointment free passages provided for Officer, wife, and children under 18 years, not exceeding 5 persons in all. Free passages on leave provided for Officer and wife only. Candidates must possess medical qualifications registrable in the United Kingdom; have obtained a Diploma in Medical Radiology, and have had not less than 2 years experience of radiology and be prepared to undertake some radiotherapy. Arrangements could if necessary be made for a short course in radiotherapy before appointment.

Application forms from Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/30/010).

HER MAJESTY'S COLONIAL SERVICE. Tanganyika. MEDICAL OFFICER OF HEALTH (Male) required for the Township Authority, Tanga. Duties consist of the administration of the Public Health Division of the Municipality and include anti-malaria control measures, &c. Appointment on contract for 3 years in the first instance for which, subject to satisfactory service, a gratuity will be payable. Gratuity is at the rate of £37 10s. for each completed period of 3 months service. Salary in the scale £1005–£1590 p.a. according to qualifications and experience. A temporary allowance of £350 a year is also payable. When available quarters are provided at rental of 10% of salary. Free passages provided for the Officer, his wife, and up to 1 adult fare for children. Income-tax at low rates. Generous home leave. Candidates must hold a medical qualification registrable in the United Kingdom and a Diploma in Public Health. Previous experience in public health is desirable. Sailing, bathing, golf and tennis are excellent.

Application forms from Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 94/8/01).

HER MAJESTY'S COLONIAL SERVICE. Trinidad. SUPERINTENDING MEDICAL OFFICER required at the Colonial Hospital, San Fernando, to have immediate superintendence and management of all technical affairs of the Hospital, to be primarily responsible for direction of all technical officers, and to obtain coördination of the work of the hospital with the aid of the lay officer who is responsible for non-technical matters. Appointment can be made on permanent basis with pension (non-contributory) at the age of 60 or on short-term contract with gratuity of £150 for each period of 1 year of service. Salary $6480 (£1350) a year. In addition a temporary cost-of-living allowance of £22 10s. a year is payable. A salary revision is being undertaken and the selected officer will benefit from any increase granted. Pension is earned at the rate of 1/600th of final pensionable emoluments for each completed month of service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights during their time in Trinidad (up to 6 years) and receive resettlement grants of 20% of the aggregate of their Colonial salary on completion of their colonial service. Unfurnished quarters provided at rental of 10% of emoluments of post and furniture is obtainable at rental of 5% of its value. Free passages on first appointment are provided for Officer and family, not exceeding 5 persons in all; and free passages on leave subject to a maximum of 3 adult fares. Income-tax at local rates. Tour of service is 3 years. Local leave is permissible and generous home leave is granted after each tour. Education facilities are available. Candidates must possess medical qualifications registrable in the United Kingdom and should be of status of Specialist Medical Officer or possess Specialist degree. They should also have had experience in hospital administration.

Application forms from Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/38/017).

HER MAJESTY'S COLONIAL SERVICE. Nairobi. Applications are invited for appointment as HOUSEMEN at the King George VI Hospital, Nairobi. Appointment will be on agreement for 1 year in the capacity of a House Physician and House Surgeon. Officers should be under the age of 30 and single. These posts are recognised for pre-registration training by the University of London and certain other Licensing Bodies but candidates should confirm from their Licensing Bodies that these posts are acceptable to them for the purposes of the Medical Act, 1950. Salary £300 a year for the first 6 months and £350 a year for the second 6 months. In addition, a cost-of-living allowance of 35% of salary and a messing allowance of £144 a year is payable. Income-tax at local rates. Furnished quarters including linen, cutlery and glassware together with light, fuel and water are provided free of charge. Free passages are provided on appointment and on satisfactory completion of internship. 18 days local leave a year is granted. If the selected candidate applies for and obtains appointment to the Colonial Medical Service in Kenya at the expiration of his internship, previous service as Resident Medical Officer will count for leave but he will be required to serve the usual probationary period. The period of internship will not count for seniority. Ample opportunities for clinical experience with systematic teaching and a large measure of personal responsibility under specialist guidance are afforded.

Candidates should apply for forms of application to the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 117/7/03).

NATIONAL COAL BOARD. South-Western Division. Applications are invited for the full-time post of MEDICAL OFFICER. The duties cover the collieries and ancillary undertakings in the No. 3 (Porth) Area of the South-Western Division of the National Coal Board, and will include the medical examination of employees, the supervision of the nursing and first aid organisation, and in general the supervision of health in relation to work. Candidates should have a good clinical background and some experience of general practice. Experience in the field of industrial medicine will be an advantage, as will the knowledge of the coal-mining industry. Salary will be within the range of £1250–£1900 p.a., according to qualifications and experience. Subject to eligibility, successful candidates will be required to join the Board's Superannuation Scheme and to reside in or near the No. 3 Area.

Applications, giving full details of age, experience and qualifications, and the names and addresses of 3 referees, should be sent to Secretariat (E) Branch, National Coal Board, South-Western Division, Cambrian Buildings, Mount Stuart-square, Cardiff, within 14 days of the publication of this advertisement."

NORFOLK COUNTY COUNCIL. The Council invite applications for the appointment of COUNTY MEDICAL OFFICER OF HEALTH from registered medical practitioners possessing the appropriate qualifications. The duties will include all statutory duties as County Medical Officer of Health and School Medical Officer, and such other duties as are, or may be, imposed by the County Council. Candidates must possess substantial administrative experience and a wide knowledge of the Public Health Services and the School Health Service. Salary £2300 p.a., rising by 2 annual increments of £100 and 1 increment of £50 to a maximum of £2550 p.a., plus travelling and subsistence allowances in accordance with the scales adopted by the County Council. The successful candidate will be required to pass a medical examination and to contribute in accordance with the appropriate superannuation act. Termination of the appointment will be subject to 3 months notice on either side to be received by the Clerk of the County Council, or given by him with the consent of the Minister of Health.

Form of application and further particulars may be obtained from the undersigned to whom applications should be returned not later than Saturday, 7th August, 1954.

H. OSWALD BROWN, Clerk of the County Council.
County Offices, Thorpe-road, Norwich.

SOUTHPORT. COUNTY BOROUGH OF SOUTHPORT. Appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners for the above appointment. Possession of a D.P.H. or D.P.M. or experience in B.C.G. vaccination or mental health work would be an advantage. Salary scale £950–£50–£1300 p.a., plus an 8 h.p. motor-car mileage allowance.

Application forms and conditions of appointment may be obtained from the Medical Officer of Health, 2, Church-street, Southport. Completed applications to be sent to the undersigned to arrive not later than 27th July, 1954.

R. EDGAR PERRINS, Town Clerk.

TEMA DEVELOPMENT CORPORATION, Gold Coast. A vacancy exists in the post of MEDICAL OFFICER OF HEALTH, Tema Development Corporation, Gold Coast (established by Ordinance No. 35 of 1952), and applications are invited. The appointment will be on contract for 3 years in the first instance, and may be renewed for another term to be agreed upon. Length of tours 12–24 months, according to age.

Salary: The salary is at a consolidated, non-incremental rate between £1530–£2310 p.a., depending on previous experience. Gratuity at the rate of £37 10s. for every completed 3 months of satisfactory service will be payable at the conclusion of the contract.

Qualification: Candidates must have a medical degree recognised by the General Medical Council in the United Kingdom, and a Diploma in Public Health and if possible a Diploma in Tropical Medicine and Hygiene and experience in public health work and clinical medicine preferably in the tropics.

Duties: The Medical Officer of Health will be responsible for the public health aspect of the development of the Tema Township, the Tema Harbour, and ancillary constructional projects such as the railways and quarries.

Applications on the prescribed form (available on request) are to be addressed to the Adviser on Recruitment, Gold Coast Office, Melbourne House, Aldwych, London, W.C.2. The successful candidate will be given free passages for himself, wife, and up to 3 children under the age of 13 years to and from the United Kingdom on leave and free medical attention.

ROYAL NAVAL MEDICAL SERVICE

Candidates are invited as Medical Officers in the Royal Navy—preferably below 28 years.

They must be British subjects whose parents are British subjects, and also be medically fit. No professional examination will be held but an interview will be required.

Initial entry will be for 4 years' short service after which gratuities (tax free) are payable, but permanent commissions are available for selected short-service officers.

Officers transferred to permanent commissions will be paid taxable grants on completion of 1 year's service, amounting to £1500.

Consideration will be given to the grant of up to a maximum of 7 years ante-date of seniority in respect of approved periods of service in recognised civil hospitals and for similar experience elsewhere.

Previous medical commissioned service will be allowed to count in full and half duration will be allowed to count in respect of non-medical commissioned service.

For full details, apply MEDICAL DIRECTOR-GENERAL, Admiralty, London, S.W.1.

STATE PUBLIC SERVICE
QUEENSLAND, AUSTRALIA
MEDICAL OFFICER (Tuberculosis Service)

Applications are invited from qualified medical practitioners for appointment as Medical Officer, Chest Clinic (Cairns), Department of Health and Home Affairs, with salary range: minimum £1748 10s. p.a., maximum £1998 10s. p.a., inclusive of present basic wage adjustments and subject to any further such adjustments. Salary in excess of the minimum may be paid according to the qualifications and experience of the appointee. An extra cost-of-living allowance of £25 p.a. is also payable.

Applicants must be registrable as medical practitioners in Queensland. Those possessing higher qualifications will receive preference but experience in diseases of the chest is essential for appointment.

Appointee will act as Consultant in diseases of the chest to the Cairns Hospital Board and will be responsible for investigation and treatment of cases of tuberculosis at the Cairns General Hospital. Appointee will also be responsible for the public health control of tuberculosis in the area, including contact investigation, Mantoux Surveys, and the use of B.C.G. Vaccine.

Further particulars may be obtained from the Agent-General for Queensland, 409 and 410, Strand, London, W.C.2.

Applications should contain particulars of full name, date and place of birth, marital status, children (if any), and any war service, and full details of qualifications and experience, and should be accompanied by references or certified copies of references.

Applications should be forwarded by air mail so as to reach the Secretary, Public Service Commissioner's Department, Box 488H, G.P.O. Brisbane, Australia, by 31st August, 1954.

NOTTINGHAM. CITY OF NOTTINGHAM EDUCATION COMMITTEE. Applications are invited for the post of SCHOOL MEDICAL OFFICER on the salary scale £950–£50–£1300 p.a. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, as modified by the National Health Service superannuation regulations.

Further particulars and forms of application may be obtained from the Principal School Medical Officer, 28, Chaucer-street, Nottingham, to whom completed applications must be returned not later than 7th August, 1954.

F. STEPHENSON, Director of Education.

YORK. CITY OF YORK EDUCATION COMMITTEE. SCHOOL HEALTH SERVICE. ASSISTANT SCHOOL MEDICAL OFFICER. Applications are invited from Women registered medical practitioners for the permanent post of Assistant School Medical Officer. Applicants must have been qualified for at least 3 years and will be required to devote their whole time to the duties of the office. Preference will be given to those who have had special experience of diseases of children. The salary offered, in accordance with the terms of the Industrial Grade Award No. 2285 (Public Health Service), is £950 p.a., rising by annual increments of £50 to £1300 p.a. The appointment will be subject to the Local Government Superannuation Acts and to the passing of a medical examination.

Form of application and conditions of appointment may be obtained from the undersigned on receipt of a stamped addressed envelope and should be returned within 3 weeks of the appearance of this advertisement.

H. OLDMAN, Chief Education Officer.
Education Offices, 5, St. Leonard's-place, York.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

BIRMINGHAM, ALL SAINTS. Applications invited for VACANCY (urban) due to resignation. List approximately 2000. Residence and surgery available. Apply on E.C.16A not later than 31st July, 1954, to—

K. F. G. DAY, Clerk of Birmingham Executive Council.
Sutton New-road, Erdington, Birmingham, 23.

HARLINGTON. Applications invited for Vacancy (urban). List at present approximately 900. Residence and surgery available. Practice at present conducted by a Lady Doctor. Apply on E.C.16A before 24th July, 1954, to—

F. J. ASHFORD, Middlesex Executive Council.
Gloucester House, Gloucester-gate, London, N.W.1.

STOCKPORT. Applications invited for Vacancy (urban) due to resignation. List approximately 930. Residence and surgery not available to successful candidate. Apply on Form E.C.16A before 31st July, 1954, to—

WILLIAM HAMMOND,
Clerk of the Stockport Executive Council.
13, Greek-street, Stockport.

Hospital Services: Non-Medical Appointments

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE GENERAL HOSPITAL. Applications are invited for the appointment of a BIOCHEMIST (Basic grade, Whitley Council scales), at the General Hospital. Candidates should possess a B.Sc. degree with honours in Biochemistry or Chemistry (or an equivalent qualification).

Applications, with the names of 2 referees, should be sent to the House Governor, The General Hospital, Birmingham, 4, within 3 weeks of the publication of this advertisement.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of BIOCHEMIST (senior grade) to the Rochdale Group of hospitals. The duties will be mainly at the Group Laboratory, Birch Hill Hospital. Further details may be obtained from the Group Pathologist, Birch Hill Hospital, Rochdale.

Applications, together with the names and addresses of 3 referees, should be forwarded immediately to the Group Secretary, Birch Hill Hospital, Rochdale, Lancs.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Pfizer Ltd., Folkestone, require registered medical practitioner for medical department. The work will include abstracting, dealing with medical queries, and general professional assistance. Commencing salary £1250 p.a.—Apply Medical Director.

Ex-Medical Secretary (7 years specialist and hospital experience) requires part-time work.—Contact: SILverthorn 4150, evenings.

Fully qualified Medical Artist seeks commissions.—For further particulars write: Address, No. 948, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Hove, Sussex. Spacious first-floor consulting and waiting room, eminently suited to medical, dental, and allied professions. —20, Brunswick-place. Hove 30395.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

The British Journal of Medical Hypnotism. Quarterly. £1 1s. p.a.—Orders to the Publishers, 4, Victoria-terrace, Hove, 3, Sussex.

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* *Lancet* (1950) 1, 1064.

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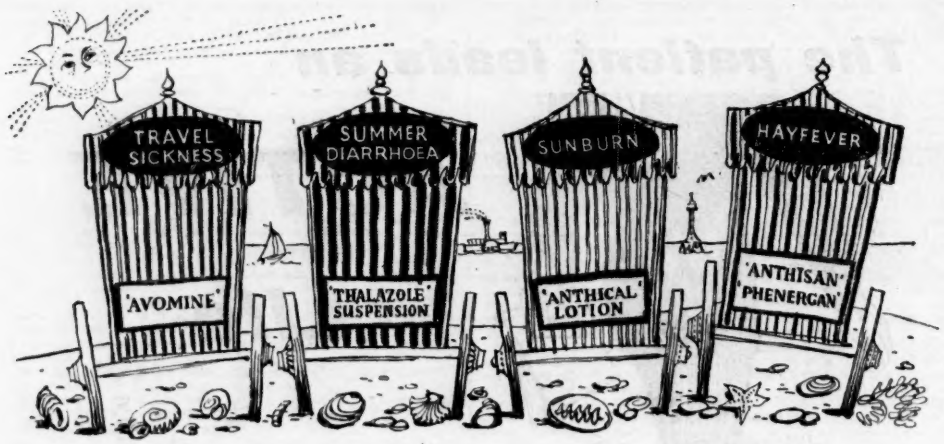

Summer Ailments

In the train of summer comes a host of minor but often annoying conditions such as hayfever and summer diarrhoea. Fortunately, most of these holiday season complaints are not serious. " I get so sick on a boat . . . he's been eating exactly the same as us, doctor . . . it was a wasp, I think". Familiar? Not the exact phrases perhaps but the type of complaint that most doctors will have heard.

You will find that in many cases there is an **M&B** brand Medical Product ideally suitable for the treatment of what we term " summer ailments ".

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—in "summer diarrhoea" when due to dysentery bacilli.
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*'**ANTHICAL' LOTION**
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Bottles of 4 fl. oz. mepyramine maleate—zinc oxide lotion.

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—the general-purpose antihistaminic for hayfever and allied allergic disorders.
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*'**PHENERGAN**' *brand*
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